



# STANDARD OPERATING PROCEDURES

FOR

# STERILIZATION OF STRAY DOGS UNDER THE ANIMAL BIRTH CONTROL PROGRAMME

Compiled by Animal Welfare Board of India



## **Animal Birth Control (ABC) & Anti-Rabies Programme is being implemented in almost all major metros of India**

**Over 1 lakh stray dogs are sterilized & vaccinated against rabies every year under the Animal Birth Control (2001) Dog Rules**

The Animal Birth Control Programme is currently being implemented in over 60 cities all over India, including major metros like Delhi, Jaipur, Chennai, Mumbai, Bangalore, Hyderabad, Kolkata, Jodhpur and Kalimpong. In Tamil Nadu & Goa, since 2007, the Animal Birth Control and Anti-Rabies Vaccination Programme has been successfully implemented for the entire state. This has led to Tamil Nadu state pioneering a new concept of a Participatory Model of the ABC Programme in 50 Municipalities and 5 Municipal Corporations, with 50% cost sharing by local bodies on participatory basis. Similarly, the Union Territory of Delhi too has adopted the Participatory Model of the ABC Programme since 2008. Tamil Nadu has also been at the forefront of rabies control initiatives, having constituted the country's first State level Coordination Committee on Rabies Control and Prevention in January, 2009, with the first meeting held on April 20th, 2009. The Animal Welfare Board of India is promoting such initiatives throughout the country.



**In all Metros, where the ABC Programme has been successfully implemented in India, a significant reduction in the number of human rabies cases has been noted. The Animal Birth Control Programme is the only scientifically proven method to reduce the stray dog population in a city or town.**



The Standard Operating Procedures for implementation of the Animal Birth Control (ABC) Programme has been brought out by the Animal Welfare Board of India to ensure that uniform and professional standards of care are provided to the stray dogs in the country undergoing the ABC Programme. Detailed guidelines on all aspects of the ABC Programme have been provided in this Manual. It is mandatory that all Animal Welfare Organizations in the country that are implementing the Animal Birth Control Programme follow the Guidelines published in this Manual. Techniques for humane catching and transportation of stray dogs, identification methods and record keeping have been dealt with in great detail. This Manual provides in depth information on basic infrastructure that all Animal Welfare Organizations doing ABC Programmes should have and also gives clear instructions on the anaesthetic protocols and pre and post-operative care to be followed by Veterinary Surgeons doing the ABC surgery. We hope that with the publication of this Manual, Animal Welfare Organizations in the country will take utmost care to ensure that all the clinical, anesthetic and surgical protocols are followed meticulously and humane care is given to the stray dogs while implementing the ABC programme.

The Animal Welfare Board of India is an umbrella of the SPCAs/AWOs and Animal Welfare Workers. It encourages Animal Welfare activities, advises Central and State Governments and other Local Bodies on matters relating to Animal Welfare and Prevention of Cruelty to Animals and also helps to formulate Animal Welfare Policies/Legislations.

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THE AWBI ESTD. 1962  
UNDER AN ACT OF PARLIAMENT

STANDARD OPERATING PROCEDURES FOR  
STERILIZATION OF STRAY DOGS  
UNDER THE ANIMAL BIRTH CONTROL PROGRAMME



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The comments and recommendations made by Dr Elly Hiby, Head of Companion Animals, WSPA and Members of the ICAM Coalition Team have been of great value and have been included in different sections of this Manual. In particular, the Emergency Reference Chart and the list of emergency medicines (as recommended by IFAW) along with a list of the Six Criteria used to identify rabies in living dogs have been especially useful and have been listed in the Annexures at the end.

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# Preface

A prerequisite of all animal welfare projects is to minimize pain and suffering to animals. Unfortunately and much as I would like to think differently, certain adverse reports about the flawed manner in which some of the Animal Welfare Organizations (AWOs) and Municipal Corporations are executing the ABC (Animal Birth Control) Project have made the development of this manual an immediate necessity.

It was brought to the notice of the Animal Welfare Board of India (AWBI) as well as the Veterinary Council of India (VCI) that some of the ABC (Animal Birth Control) Projects operational in the country are being carried out without maintenance of adequate standards. Housing dogs in unhygienic conditions and administering insufficient sedatives, anesthetics, painkillers and antibiotics, and adopting poor surgical techniques during surgical procedures is a serious violation of the Veterinarian's Oath and is unethical.

Another area of concern in the implementation of the ABC Programme is the process of catching stray dogs in ways that are not humane. This is often resorted to, by some of the dog catchers employed by AWOs and Municipal Corporations. It was felt that some of these deficiencies were due to lack of awareness among the AWOs about the correct techniques that need to be followed. The main factor influencing the success or failure of an ABC Programme is proper adherence to guidelines and implementation of standardized procedures and proper record keeping.

In order to address these deficiencies, AWBI conducted a workshop at its Headquarters in Chennai, where the experts worked out guidelines and standardized procedures to be followed in implementing the ABC Programme correctly. The present manual is an outcome of that workshop. With the publication of this manual titled, '**Standard Operating Procedures For Sterilization of Stray Dogs Under the Animal Birth Control Programme**', I do hope that by following this SOP in letter and spirit, the shortcomings seen in implementing our ABC Programme will be removed.

This manual explains in clear and simple language, the AWBI approved procedures / techniques and protocols to be followed at every step of the ABC programme. Issues like humane techniques for catching and transportation of stray dogs, anesthetic and surgical protocols to be followed, along with provisions for post-operative care and safe release of neutered and vaccinated dogs back into their habitats have all been dealt with, in meticulous detail.

I hope that with the publication of this, '**easy to read and follow SOP manual**', made available to Animal Welfare Organizations, Shelter Managers, Veterinarians, NGOs and Officers in Municipal Corporations / Panchayats, all ABC projects will function efficiently and with uniform standards so as to provide the best possible surgical protocols and clinical care in the ABC Programme.

Maj. Gen. (Retd) Dr. R.M. Kharb, AVSM  
Chairman,  
Animal Welfare Board of India

# Attention! Animal Welfare Organizations

**Animal Welfare Organizations in India that are carrying out the ABC Programmes are directed to strictly abide by all Guidelines outlined in the SOP-ABC Manual published by the Animal Welfare Board of India**

The Standard Operating Procedures (SOP) for Animal Birth Control (ABC) Programmes is being published by the Animal Welfare Board of India to provide Animal Welfare Organizations in the country with useful guidelines so that the Animal Birth Control Projects can be carried out with a uniform and standard code of professional practice, efficiently, diligently and humanely.

In case any Animal Welfare Organization in India that has been granted recognition from the Board and is also getting grants from AWBI, under the ABC Grants sanctioned under Central Sector Scheme, does not follow the Guidelines drawn in the Animal Welfare Board of India's SOP ABC Manual in letter & spirit, then the Animal Welfare Board of India will take strict action against the erring Animal Welfare Organization **by derecognizing the Animal Welfare Organization and immediately stopping all financial assistance to the said Animal Welfare Organization and further, the name of the erring Animal Welfare Organization will be blacklisted by AWBI and displayed on the Animal Welfare Board of India's website.**

## Warning!

Strict action will be initiated against Veterinarians involved in the Animal Birth Control Projects who do not adhere to the Clinical, Surgical and Anesthetic Protocols listed in the SOP-ABC Manual. The names of the erring Veterinarians will be sent to the Veterinary Council of India and a **Letter of Warning** will be issued by the Animal Welfare Board of India and the Veterinary Council of India to the erring Veterinarians. If they fail to take immediate corrective measures within four weeks of receipt of the letters, the names of the Veterinarians will be **blacklisted** and displayed on the website of the Animal Welfare Board of India along with their photographs.

# Introduction

- Recognizing that a growing problem of human and dog conflicts exist in towns and cities throughout India, the Animal Welfare Board of India (AWBI) wishes to promote the humane and effective population control of street / stray dogs through the use of Animal Birth Control (ABC) programmes in all municipal areas, including small towns and rural areas. Rabies and dog bites present a significant cause of human suffering and financial loss to the country.
- The World Health Organization (WHO) has long recognized that mass destruction of street dogs is an ineffective method of controlling dog populations<sup>1</sup>. Besides, mass killings by municipal authorities are often undertaken in a cruel and very inhumane manner.
- An ABC project can help to control both, street dog populations as well as human / animal rabies when conducted efficiently<sup>2</sup>. ABC programmes aim to catch street dogs, surgically sterilize and vaccinate the dogs against rabies and release them back to the exact location from where they came. The sterilization of mainly female dogs, should be sufficient to control the population. Vaccination of the dogs against rabies will help limit the transmission of this fatal, zoonotic disease.
- It is to encourage uniformity of protocols and the efficient functioning of the ABC Programme and also to ensure that they operate in a humane and professional manner that these Standard Operating Procedures have been produced. The Animal Welfare Board of India hopes that civic bodies, Veterinary Colleges; Universities; Animal Welfare Organizations (AWO); Residents Associations; Animal Husbandry Departments and other interested individuals and institutions will become involved in the humane control of street dogs through ABC projects. In addition, civic bodies are urged to address urgently the problems of solid waste and slaughterhouse waste management which have a direct bearing on the the growth of the dog population.
- The AWBI has formulated a Standard Operating Procedure for the Animal Birth Control Programme for the sterilization of stray dogs. These guidelines have been detailed to provide a base line for setting up an ABC unit as well as for running the programme systematically and efficiently. In metros as well as in other areas, the role of the Panchayat and Municipal authorities is as crucial as the AWO that is conducting the ABC programme.
- This SOP gives clear guidelines that are to be followed by Animal Welfare Organizations while implementing an ABC programme.

## **Guidelines to be followed have been appended in 9 sections as listed below:**

1. Survey of the stray dog population in the area
2. Humane capture and handling of stray dogs
3. Transportation of stray dogs
4. Basic infrastructure required for ABC Programmes
5. Key elements of A Successful ABC Programme: Need for Proper Identification, Record Keeping & Monitoring Systems
6. Preoperative considerations
7. Surgery for ABC Programs: Anaesthetic & Surgical Protocols
8. Post-operative care, Anti-rabies Vaccinations & Safe Release of dogs
9. Euthanasia, Post-mortem Exams and Verification of ABC Surgeries



## **Section 1**

# **SURVEY OF THE STRAY DOG POPULATION IN THE AREA**

- **1.1 General Considerations**
- **1.2 Points to be noted while doing the field survey**
- **1.3 Techniques for doing a Dog population Count**
- **1.4 Need for a female centred approach**
- **1.5 The ABC Programme: Procedural Overview**
- **1.6 Role of the Community**

# SECTION 1

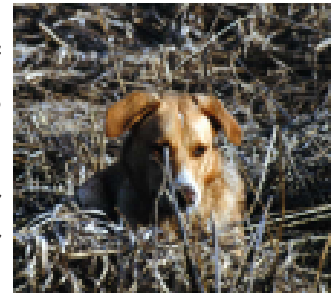
## SURVEY OF THE STRAY DOG POPULATION IN THE AREA

### 1.1 General Considerations

A field survey of the housing colonies for assessing the population of stray dogs where the ABC program is to be targeted is essential, before initiating the programme. Assistance may be sought from the Resident Welfare Associations (RWAs) in the neighbourhood to co-operate in the program. Residents in the area can help the Animal Welfare Organization (AWO) staff by identifying the places where the stray dogs are living in the residential colonies. The Resident Welfare Associations can also support the programme by providing manpower support by involving their staff, sweepers and security personnel to help the AWO staff in catching the dogs. In addition, the local municipal authorities can help educate the public about the programme by providing leaflets and pamphlets about the Animal Birth Control (ABC) project. It would be a good idea for the Animal Welfare Organization / Municipal Corporation undertaking the ABC Programme to refer to The World Society for Protection of Animals (WSPA)'s publications titled, 'Surveying roaming dog populations: guidance on methodology' and the ICAM Coalition's 'Guidelines on Humane Dog Population Management'.

### 1.2 Points to be noted while doing the field survey

- Average number of dogs identified in the area and the number of pups seen on the street. If more number of pups are seen, it indicates that more number of fertile females are present in the area.
- The addresses and contact numbers of the RWA representative or local residents / village pradhan is required for follow ups, both after pickups and subsequent release of dogs back to the areas from where they were brought from.
- Animal welfare activists in the area should be identified and educated about the ABC programme and its purpose. The activists should be given the addresses and phone numbers of the AWOs involved in the ABC Programme as well as the local Municipal Officers, in charge of that ward. The activists should then be guided to do a proper follow-up on the status of the dogs released.
- Some common landmarks need to be identified like, water tanks, parks, post boxes etc. to facilitate proper relocation of the dogs at the time of release.



### 1.3 Techniques for doing a Dog Population Count

#### 1.3.1 Method 1

Divide the city into non-overlapping regions such as municipal divisions or postal zones or, failing that, into blocks bounded by major roads. Then, select a random sample of those regions and use street counts of that sample to estimate the total number of dogs roaming the city at the time those counts were made. One way to do that is simply to divide the total count by the sampling fraction, for example if a random sample of twenty regions from the two hundred regions

covering the city is selected, divide the count by one tenth ( $20/200 = 1/10$ ), in effect multiplying the total count by ten.

The guide ‘Surveying roaming dog populations; guidelines on methodology’ (available from <http://groups.google.com/group/dog-population-survey-guidelines>) suggests one way to make a random selection of regions that are also well spread out ( the worked example from Cairo below will make it clear). It also explains how to measure the reliability of the estimate.

**Worked example from Cairo (from ‘Surveying roaming dog populations; guidelines on methodology’)**

In the following worked example, the centre of Cairo is split into 108 non-overlapping blocks along major roads, with each block containing approximately 5 km of road, 5 km was chosen as it could be counted within approximately 1 hour if using a bike. Then a sample of blocks is selected using a methodology of colouring in all the blocks without assigning the same colour to neighbouring blocks (figure 1 a) and then selecting only one colour for the sample (figure 1 b). The calculation that follows uses fictitious data to work through how to use the results of counts in the sample blocks to estimate the roaming dog population of a city.

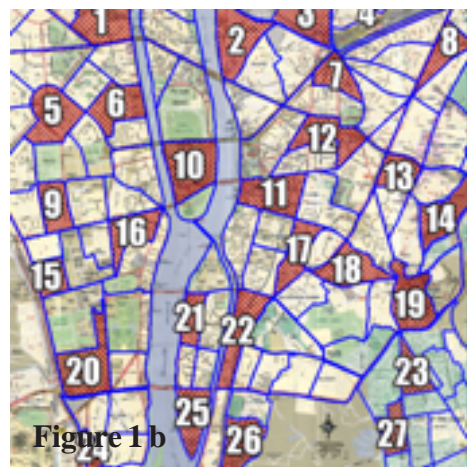
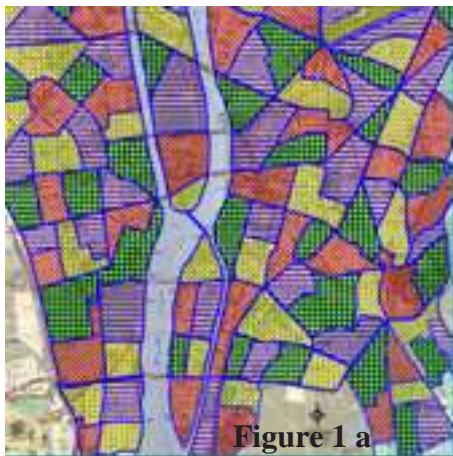


Figure 1a. All 108 blocks assigned one of four colours, with no neighbouring blocks of the same colour and an equal number of blocks of each colour.

Figure 1b. Central Cairo divided into 108 blocks, with 27 blocks selected.

Counting was carried out over a three week period between the hours of 2am and 6am, as the street lighting in this area was good and this was the period of time when the number of roaming dogs was at its highest. A total of 542 dogs were seen in these 27 blocks.

The population estimate is calculated by dividing the total number of dogs counted in the sample blocks by the sampling fraction:

$$\frac{\text{total number of dogs counted}}{\text{number of sample blocks} / \text{total number of blocks}} = \frac{542}{27 / 108} = \frac{542}{0.25} = 2168$$

Between the hours of 2am and 6am, there are an estimated 2,168 roaming dogs in this city.

If an intervention is under way and involves catching dogs on the street, a potential source of readily available information is counting done by the dog catchers themselves. In Jaipur, the 'compounders' working for Help in Suffering use a blood cell counter mounted within the vehicle to record dogs they see while searching a selected region for unspayed females. Blood cell counters are easily available from medical supplies stores. They typically have five buttons that can be numbered or colour coded to record, for example, neutered and entire males, neutered females, lactating females and non-lactating females. The counts can be recorded and the counter zeroed each day at the shelter.

### 1.3.2 Method 2

Give records of the number of spayings conducted to date in each region and an estimate of annual survival of these observed percentages can be used as a quick way to monitor the total number of roaming dogs within each city region. The way to do this is to first estimate how many of the spayed dogs released each month since the start of the intervention have survived, add up those numbers and divide the total by the fraction of roaming dogs that are spayed according to the latest counts. For example, if the estimate is that there are 10,000 surviving spayed dogs and half the roaming dogs are spayed, then based on this figure, there must be a total of 20,000 roaming dogs.

### 1.4 Utility of a female centred approach



For an ABC Programme to be effective, it is essential that at least 90% of the female dogs (bitches) in an area are sterilized. That is because, even one unspayed female remaining in the population can give birth to as many as 20 pups a year. Besides, one unneutered male can mate with many females resulting in hundreds of extra puppies. It is important to note that although a female centred approach is the most efficient for population control, at least 70% of the dog population should be vaccinated against rabies. Hence males should also be caught, vaccinated and surgically sterilized.

A programme concentrating on males rather than females can be rendered completely ineffective if only a few males escape sterilization, whereas the same number of missed females will have a very limited effect. Therefore, a female-focussed programme is a more effective use of limited resources.

### Benefits of a female-centred approach

- If there are fewer bitches in heat, there is less aggression in male dogs in dispute over females.
- Unneutered males can protect more effectively the territory of the group, reducing inward migration of dogs from outside possibly carrying rabies and other infectious diseases.
- Spayed females are more able to maintain body condition on a limited food source as they are not supporting pregnancy and lactation.





- In addition, the post-operative complications of castration are more difficult to treat. Adult males are difficult to handle during post-operative treatment, particularly in cases of swelling, irritation and suture breakdown. Post-operative care of the females is less intrusive and better tolerated by the bitches and thus safer for the staff.

### 1.5 The ABC Programme: Procedural Overview

- a. Selection of a predetermined 'area' by using the map of the city, and then moving in sequential order through the selected area of the city, where the Animal Welfare Organization plans to carry out the ABC Programme.
- b. Carry out a dog count and make an estimate of the dog population in the area
- c. Catch as many female dogs as possible from this area and transport them back to the shelter.
- d. Identify the dogs using a suitable identification technique
- e. Carry out spaying of all female dogs in the area, save those that are not fit to survive on the street either due to extreme aggression to humans, illness or injury
- f. Vaccinate all dogs in the area against rabies
- f. Arrange for release of the sterilized and vaccinated dog back to the same area where caught as soon as the dog is fully recovered and fit for street life.
- g. The area should be reworked repeatedly. It is only when staff return several days in succession without optimum catches, that a new area should be selected and worked.



### 1.6 Role of the Community

- Prior to conducting an ABC Programme in an area, the Animal Welfare Organisation should make diligent efforts to sensitize, inform and educate the community about the effectiveness of ABC Programmes in helping to reduce the dog population growth as well as in eradicating rabies.
- The support of eminent people in the community should be sought and awareness programmes should be conducted in the neighboring schools, colleges, companies and community centres. Awareness should be created among shop owners and merchants, hospitals, banks and public service organizations in the neighborhood and their support should be sought.
- Posters and banners informing the public that all stray dogs in the selected area are going to be sterilized on specific dates should be put up in prominent places all over the neighborhood. Doing so can help the Animal Welfare Organization to get more volunteers and dog carers to bring dogs to the ABC Centre or near the dog catching van.
- Every effort possible should be made to encourage community carers / guardians to bring their dogs to the dog catching van or to the ABC centre. It must be remembered that it is only when the community is involved about such initiatives, that the community will come forward to take collective responsibility and thus play a more pro-active role in supporting welfare measures for stray dogs.



## Section 2

# HUMANE CAPTURE & HANDLING OF STRAY DOGS

- 2.1 General Principles
- 2.2 Catching Techniques
- 2.3 Dos and Don'ts with regard to catching of dogs
-

## **SECTION 2**

# **HUMANE CAPTURE & HANDLING OF STRAY DOGS**

### **2.1 General Principles**

**2.1.1** The catching method used by the AWO or Municipal Corporation should be humane and gentle. The dogs must be treated with kindness to minimize stress to the animals. The catching method used for each dog should be the least invasive, most humane method possible that can be safely applied for that particular animal and situation.

**2.1.2** Dog catchers employed by the AWO / Municipal authority need to be trained for at least one month in order to become skilful at catching the dogs humanely. Staff should be regularly monitored while catching the dogs.

**2.1.3** Dog catching staff, whether directly employed by the ABC project or by another agency to catch dogs, must be fully and properly vaccinated against rabies. Adequate training in the treatment of dog bite wounds, along with emergency first aid kit should be provided to the dog catching team.

### **Warning!**

Cruel, rough handling of dogs can never be condoned. Tongs and wire loops must never be used in any circumstances to catch dogs. The practice of swinging dogs by loops or chains around the necks, or by the legs is strictly prohibited.

### **2.2 Catching Techniques**

The technique used depends on the dog, the situation and the expertise available.

**The following five methods are acceptable for catching street dogs:**

- By Hand
- Sack and Loop Method
- Use of Dog-catching hoops with nets (Butterfly Nets)
- Use of the Balinese pole-net

#### **2.2.1 By Hand**

##### **Technique**

A skilled dog catcher can call or offer food to a friendly dog and gently hold the dog by the scruff (loose skin on the back of the neck) of the neck with one hand, as close to the head as possible and with the other arm under the belly or around the rump, the dog should be lifted and placed gently into the van.

## Advantages

- It is the most humane method of catching a dog
- This is probably the least stressful method for dogs.

## Disadvantages

- Hand catching may result in bite wounds to the dog catchers if used on fearful or aggressive dogs.
- Mastery of this technique requires that the dog catcher be experienced, even tempered, courageous and strong.

**Caution: The practice of including ear flaps in the scruff hold is very painful and can cause severe injury to the dog and should never be done.**

### 2.2.2 Sack and loop method

#### Technique

In this technique, a specially designed gunny bag that has a rope at one end, which works like a draw string is used. The sack is thrown over the dog and the rope is pulled at one end, thus sealing the gunny bag and trapping the dog inside the bag. The sack is then lifted into the van and the rope loosened, releasing the dog into the van.



*Fig 1a: Illustration showing gunny bag with a rope attached at the top that works like a draw string*

#### Advantages

- The chances of injury to the dog by this method is much lesser.
- It is not so distressing for onlookers to watch dogs being caught in this way.

#### Disadvantages

- Sacks can get dusty and dirty and will need to be washed periodically to make sure that no infections are transmitted from one dog to another. Besides, the sacks can get worn out easily and tears may form at the edges, in which case the sack may need to be darned or replaced by a new sack.
- The sack catching method requires training and considerable patience and it's difficult to catch running dogs using this method.
- Dogs may struggle a lot when placed inside the sack.

### 2.2.3 Use of Dog-catching hoops with nets (Butterfly type Nets)

#### Technique

Large, deep, 2 ply polypropylene nets of about 5 feet in depth and 3 feet in diameter, secured to circular metal (preferably made of a light alloy) rims, attached to long handles are used to 'scoop up' the dogs. The dog is then caught inside the net by twisting the mouth of the net. Once the dog is securely placed inside the net, the pole can be used to carry the dog in the net. Some AWOs

that use this method of catching the dogs leave the dogs restrained in the net until arrival at the ABC facility.

### Advantages

- Once practiced correctly, the chances of the dog being injured while being caught by this method is minimal.
- It is a safe and effective method for catching dogs since in this method, the safety of both, the dog and the dog catcher is taken care of.
- This method is particularly useful for catching dogs moving in large, open spaces.

### Disadvantages

- A large number of butterfly nets will be needed as the numbers of nets used should be proportional to the number of dogs that are to be caught.
- The nets may require frequent repairs.
- Fair amount of training is required for this method.

#### 2.2.4 Use of the Balinese pole nets

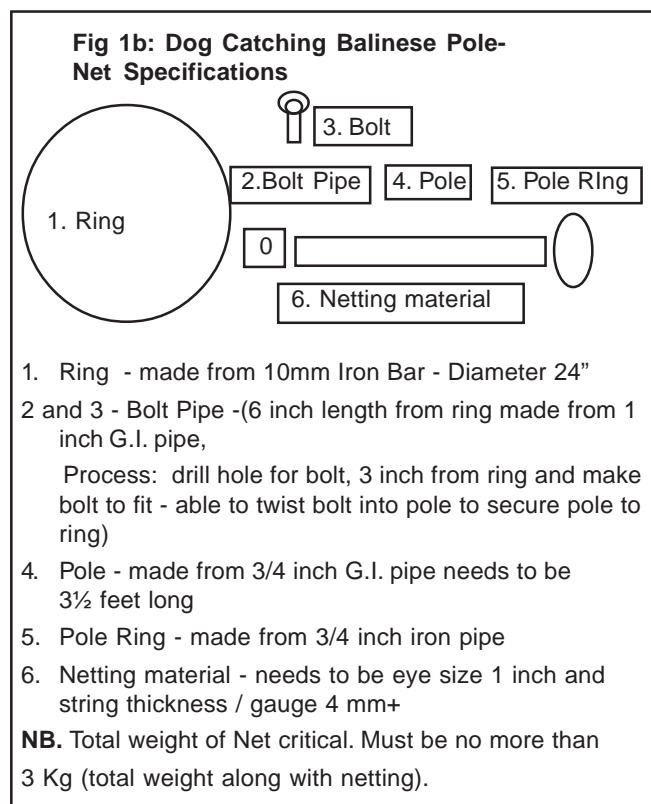
The Balinese net is essentially a very robust pole net and was originally designed, in 1998, by Mr. Nana Prayoga, a veterinary technician, who works for the Balinese animal welfare society 'Yudisthira Street Dog Foundation'.

Originally intended for the small to medium sized (around 15 kg) dogs found in Bali, it has become more popular after a group of Balinese catchers went to Sri Lanka shortly after the Tsunami to assist with disaster relief. Balinese nets have been successfully introduced into India, especially in Ahmedabad and Jodhpur, where this technique of catching dogs has become quite popular.

**Method:** Catching is carried out by placing the ring, or hoop, over the dog that then, usually, moves into the bottom of the net. The net is then continually twisted until the dog is totally restrained.

### Advantages

- The unique aspect of the Bali net is that the pole of the net can then be removed and placed through the netting, this acts as a lock to secure the dog, and serves as a handle to carry the dog safely to the waiting transportation vehicle.





- Provided the transportation time from point of capture to the dog shelter is not too long (approx. 1 hour), the dog can safely remain within the net during transport.

- Through this method, it is easier to sedate or vaccinate very aggressive dogs that are difficult to approach with a pole or long reach syringe, as many dogs can be caught and vaccinated through the netting.

- Dogs weighing upto 20 kg can be caught by this method.
- It is safest to catch rabid dogs by the Balinese pole-net and the butterfly type nets.



### Disadvantages



- The net method may not be suitable for all situations or all catchers, but could be regarded as an additional tool to enable maximum capture of dogs in the ABC programme.

- The Balinese pole net may not be available in many parts of India and will need to be designed or specially ordered

- If the quality of the netting used for the net is not very good, then the net may break while catching the dog and dog catching may not be possible by using this technique

### 2.3 Dos and Don'ts with regard to catching of dogs

- All dog handlers must be given prophylactic vaccinations against rabies.
- Dogs should be caught and released preferably in the early morning hours to avoid heat stress and to prevent the dog-catching vehicle being delayed by traffic jams.
- The dogs should be released nearest to the point of capture and away from busy roads
- Dogs should be handled gently as far as possible. Tongues and wires are not to be used at all for catching or restraining the dogs.
- Dogs picked up should not be under 3 months of age
- Dogs that are 4 months and above may be picked up for sterilization
- Old dogs and visibly pregnant bitches should not be picked up.
- Dogs with severe mange or scabies or those with signs of possible infectious disease should not be caught along with healthy dogs. Dogs that are ill should be caught separately and treatment should be provided and the dogs housed separately from the dogs that are caught for the ABC Programme. If the Animal Welfare Organization does not have facilities for treating the dogs, the ill dogs should be transported to the nearest veterinary hospital where proper treatment and care can be provided.
- A dog that's known to bite needs to be handled with caution and immediate veterinary attention should be sought on arrival at the ABC centre. It is important to note here that only

a small percentage of all dogs that bite are rabid. The dog handlers must be made to understand that often, dogs bite in response to a perceived threat. Besides, dog handlers must also be given sufficient instructions in dog behaviour and dog psychology. The dog handler should be able to explain calmly to onlookers that there is no reason to panic.

- If a dog showing clinical signs of rabies is caught, then the most important point to be noted is the safety of the dog catcher and ensuring that they use proper wound treatment if bitten, followed by post-exposure treatment. A rabid dog should always be immediately admitted to the rabies ward of the nearest veterinary hospital for observation. If no veterinary hospital will accept a dog with clinical signs of rabies, the dog should be euthanized at the ABC Centre for reasons of both animal welfare and human safety.
- The dog handler must also get information from the local public, about when the rabid dog was last seen in the colony. Other details like, whether people have been bitten and, whether or not other dogs in the colony have come in contact with the rabid animal should also be obtained. In such a case, the municipal authority or the local NGO also needs to be informed to cover the exposed dogs with post exposure shots of the anti-rabies vaccine.
- It is advisable that the AWO works systematically and catches dogs from one residential housing colony at a time. This would help in systematic combing of the area and results would be visible soon. If dogs from different housing colonies are picked up, some colour code using holi colours could be worked out and the appropriate colours dusted on the dogs' backs for identification. Dogs from different colonies are also more likely to get into fights.
- While planning an ABC program for any city, town or village, the most effective technique of instituting rabies control as well as dog population control would be to use a 'periphery to centre approach'. The reason being that, it is often the border areas of a city or town, i.e. those areas in close contact with neighboring forests and wild dogs, where the chances of rabies outbreaks occurring are most likely.
- The AWO must always start from a radius of 5-7 kilometres around the ABC centre. One can move from the centre to the periphery and then gradually include other areas, once the initial radius is covered. A minimum of 80% of the female dogs in the area should be sterilized before moving to the next residential area.
- Females that are lactating should not be picked up, as puppies will starve if the mother is removed for sterilisation whilst she is still visibly lactating. Instead, the location of the lactating female dog should be noted and an effort should be made to ensure that she and her offspring are friendly and therefore catchable when the puppies are older – periodic feeding by catchers or local people willing to help the dog catchers can facilitate this.



## Section 3

# TRANSPORTATION OF STRAY DOGS

- **3.1 Vehicular design considerations**
- **3.2 Basic specifications for dog catching vans**
- **3.3 Dog transportation: Dos and Don'ts**
- **3.4 Choice of vehicles**



## SECTION 3

# TRANSPORTATION OF STRAY DOGS

### Key Concerns During Transportation of Stray Dogs

Once caught, the dogs must be safely transported to the ABC premises. The type of vehicles to be used will depend on the organization involved and the areas from which the dogs are to be caught. The vehicle should be easily able to navigate small lanes and byways in cities and towns.

#### 3.1 Vehicular design considerations

- The vehicle should be robustly constructed to hold and transport the dogs. Attention should be paid at the time of assembly and during maintenance that the dog holding section of the vehicle is free from sharp edges, protruding screws etc so that the chances for injury during transport are prevented.
- The vehicle design needs to be such, that dogs can be placed in the vehicle without allowing dogs already within, to escape. For this purpose, a horizontally hinged, inward swinging, flap door has been found to be effective. For larger vehicles with a high chassis, a ramp may aid safe loading and unloading of dogs.
- The dogs should also be transported in a manner that they do not fight with one another.
- The vehicle must be adequately ventilated, even when a full load of dogs is contained within.
- The destructive power of street dogs and corrosive nature of canine urine and faeces must be considered when selecting the vehicle.
- The vehicle should be easy to clean and should be sufficiently strong and secure so that the dogs once caught, cannot escape.

#### 3.2 Basic specifications for dog catching vans

- The dog van should have a closed body with windows (fitted with grills) on both sides for ventilation
- The van should have two separate compartments, the driver's compartment and the dog holding compartment.
- The driver's compartment should be able to accommodate a minimum of two dog handlers, in addition to the driver.
- A sliding window at the back of the driver's seat should be fitted to allow the dogs being caught and transported to the dog holding area to be viewed.
- A ramp is necessary in large vehicles to transport the dogs into the van. A dismountable ramp may also be used. Alternatively, vehicles with hydraulic lifting systems may be used.



### 3.3 Dog Transportation: Dos and Don'ts

- Try to pick up and release dogs in the early morning hours to avoid heat and undue stress to the animals.
- Avoid overcrowding in the vans, both during pickup and during release.
- If the travel distance is more than three hours, stop on the way and provide water for the dogs.
- An attendant should periodically check the dogs in the vans, when in transit.
- Dogs should not be tied to rings in the van. As far as possible, provisions should be made for individual cages in the van.
- Vehicles should be cleaned after every use for transporting dogs.
- Catchers should not ignore obviously sick or injured dogs when catching. Therefore, at least one separate cage for an injured, ill dog (including suspect rabid dog) or puppies should always be carried in the van. Additional vehicles or catching times could also be used to specifically pick up dogs that the public has reported as sick or injured.
- Great care should be taken during loading, transportation and unloading. Rubber matting around the edges of the loading gate/ flap / floor can assist in protecting the dogs when loaded.

### 3.4 Choice of Vehicles

Vehicles found suitable for the purpose of catching and transporting the dogs include the following:

<b>Type of Vehicle</b>	<b>Maximum capacity</b>
TATA - 407	12- 15 dogs
TATA - ACE	6-8 dogs
Maruti Van	5-6 dogs
Small Tempo	4-5 dogs

The above listed vehicles can be easily adapted and modified to serve as dog catching vans.



## **Section 4**

### **INFRASTRUCTURE FOR ABC PROGRAMMES**

- **4.1 Housing**
- **4.2 Kennel management**
- **4.3 Operating facilities**
- **4.4 Anti-Rabies Vaccines**

# SECTION 4

## INFRASTRUCTURE FOR ABC PROGRAMMES

### Basic infrastructure for ABC Programmes

Before an ABC Programme can be carried out, the Animal Welfare Organization must take care to ensure that minimum standards of housing, feeding, hygiene and veterinary care are provided for the stray dogs. The preparation room and operation theatre must be well equipped with necessary instruments, equipments and medicines to adequately handle the volume of work as well as to ensure that surgery carried out on the dogs is free of any untoward complications. The AWO must also take care to ensure that adequate number of personnel are available on



duty to run the ABC Program efficiently.

#### 4.1 Housing

It is essential that in addition to the general housing arrangement made for the stray dogs selected to undergo the ABC Programme, arrangements are also made to provide a separate quarantine area to house dogs suspected to be rabid. Besides this, the ABC Centre should also have a separate isolation area to house individual dogs that show symptoms of illness. If possible, arrangements should be made to ensure that the drainage system is kept separate in the areas where the rabid and ill dogs are housed.



##### 4.1.1 General Considerations



Open kennels in which a large number of dogs are kept loose is not a satisfactory arrangement. However, if group housing cannot be avoided, it is imperative that overly aggressive dogs be kept far away from very timid dogs. Aggressive dogs need to be isolated not only from timid dogs but also from other aggressive dogs, as they will also fight. Care should be taken to ensure that at feeding time, there are more bowls of food than dogs present in each kennel. As

much space as possible should be present between bowls so that one dog cannot guard more than one bowl.

**Important:** Even if the dogs are being accommodated in group housing, it is mandatory that just after surgery, the operated dogs are kept in individual cages that are at least 3 feet wide, 3 feet deep and 3 feet high. The dogs should be kept in these kennels, not just until they recover from the effects of the anaesthesia, but for at least a minimum period of another 48 hours more, so that dressing and postoperative care can be given more easily.

During the period of stay at the kennels, the dogs must be provided with access to water at all times and must be given adequate shelter from climatic extremes. Tying of street dogs by leashes or chains is not recommended.

## 4.1.2 Cages

For temporary housing of dogs and for individual housing during transportation, a cage with minimum dimensions of 3 feet high, 3 feet wide and 3 feet deep is advised. However, such cages are not suitable for long term housing of dogs.

## 4.1.3 Kennels

The kennels should be 3 feet wide, 4 feet deep and at least 6 feet high. Three sides of the kennel should be made of brick. The kennel should be provided with a door or gate of vertical iron bars. The gaps between adjacent bars should be no more than 2 inches. Adequate roofing is necessary to provide shade and shelter from inclement weather and also to prevent the dogs from escaping. Care should be taken while designing the kennel to ensure that there is sufficient cross ventilation of air through the kennels.

## 4.1.4 Doors, Windows, Doorways, Walkway & Verandah:

### Doors

Doors (and windows, fences etc) should be made of iron welded rods and bars. Doors should open both inwards and outwards as this enables easier kennelling of dogs and easier checking of dogs post-operatively.



Doors should be secured by bolts. Adding metal bolt hole plates on the door jamb to prevent bolt holes becoming enlarged is helpful as dogs attack the doors. The hole in the bolt hole plate should not be circular in shape but of an elongated shape running vertically which will provide better support in the event that the door drops on its hinges over time. Rather than using angle iron for the door frames, it is recommended that masonry pillars be used, which is why bolt hole plates are needed. A disadvantage of using angle iron is that, the doors can then be opened one way only. The walls and surrounding fences should be designed to make climbing difficult.

No gap should exceed 2 inches to prevent pups escaping. This includes gaps between door frame and floor. Two inches is measured from the edge of one bar to the adjacent edge of the next bar, i.e. does not include the thickness of the steel of the bar.



### Windows

Rear windows (barred as for doors with an inter-bar space of 2 inches) improve ventilation and light. If possible, such windows should have bars so positioned that there is no window ledge within the kennel. Again depending on location, windows may need verandahs / overhangs to prevent sun or rain entering the kennel. If rear windows are not possible, then air vents should be incorporated to allow some inflow of air.

### Doorways

Doorways should be of adequate height to allow easy access and exit for the AWO's personnel.

## Gates

Gates from kennel areas should open into the kennel enclosure and should be fitted with spring closing mechanisms to limit the possibility of dogs forcing the gate open, or of them being left open inadvertently. Bolts securing the outside gates should have chains so that the bolt may be secured in the closed position to prevent the dogs from moving the bolt.



### Walkway

Outside the kennels, a walkway of concrete is needed, preferably draining away from the kennel.

### Verandah

Depending on the situation kennels should have an adequate verandah to shade the kennel from the sun.

**Example: The example given below is from the kennels constructed at the Help in Suffering Shelter in Jaipur, Rajasthan and may be used as a guide to build the kennels**

Dimensions of the two designs of kennels used at the Help in Suffering Shelter are given below:

#### 'A' Kennel block (outside)

Width:	4ft 10 in.
Depth	5ft
Height	7ft 6in.
Doors	3ft wide (total aperture)
Platforms	depth (front to back) 2 ft. height (above floor) 1 ft 5 in. (but would be better at 4 inches)

#### 'N' Kennel block

Width:	3 ft 6in
Depth:	4 ft 6 in
Height:	7 ft 6 in
Doors	2 ft 5 in (total aperture)
Platforms	depth (front to back) 1ft 9 in. height (above floor) 4 in

#### Fencing of Enclosure:

Fencing generally: 6 ft 10 in. high

Fencing at unloading area, and between shelter and street: 8 ft 3 in (with last foot as inward facing overhang)

#### **4.1.5 Flooring**

The floor should be of concrete to facilitate easy cleaning and should be sealed with a sealing material like Bondcrete or any other equivalent. The kennels should be designed to have a raised area at the rear of the kennel so that the dog may lie down comfortably there.

#### **4.1.6 Drainage**

The floor must be designed with a slight slope so that fluids can be easily drained out and cleaning the floor of the kennel is easy. Drains should be covered by a secure, rust resistant grill or jhali. Drainage channels or pipes should be straight. Each kennel should have a separate drain (covered with jhali) leading to a main effluent drain. Drains should be kept straight and have well designed chambers with access from surface at frequent points to allow cleaning. PVC pipes of at least 4 inches diameter may be better than ceramic pipes. Adequate access chambers to drainage pipes are required for cleaning purposes. Run-off water from roofs should drain out separately and should not be allowed to enter the kennels.

Care should also be taken to ensure that all plug points, electrical switchboards and cables are located at a sufficient height above the ground. Dogs are naturally curious animals and have a tendency to bite wires and play with pieces of tubing. This should be taken into consideration when constructing kennels.

#### **4.1.7 Unloading Areas**

Secure areas for unloading dogs from vehicles and to allow secure examination of dogs in kennels should be provided.

### **4.2 Kennel Management**

#### **4.2.1 Cleaning**

Proper arrangements should be made to ensure the kennels are efficiently cleaned. Cleaning and sanitizing products like that manufactured by Sage Systems is recommended.

#### **4.2.2 Water: Supply, Storage and Drainage**

Arrangements for adequate water supply and sufficient number of storage tanks, taps and pipes should be made. Drains from each kennel and linking up to the common corridors and other spaces should be designed in such a way that they can be easily cleaned. Limiting the number of bends in drainage pipes will facilitate easier cleaning. While designing the drainage system, care should be taken to ensure that access chambers are provided to allow access to the drains and to facilitate thorough cleaning of the drains in case there are any blocks.

Kennel management requires the use of large volumes of water. Hence, good rain water harvesting and storage systems should be set up. Besides, the staff should be encouraged to follow good water conservation practices. Taps in kennel yards to which dogs have access to are prone to damage by dogs. The dogs may also use protruding taps and pipes as a means of climbing a fence or wall.

#### **4.2.3 Food: Supply, Storage, Preparation and Distribution**

Consideration also needs to be given to ensure that the dogs are fed nutritionally, balanced food that is free of adulterants and obtained from a reliable food supplier. It is recommended that dogs undergoing the ABC surgery be given only vegetarian food. Well balanced, nutritious food that combines a proper blend of carbohydrates, proteins and fats and is rich in vitamins and minerals should be fed to the dogs twice a day.

## Benefits of serving vegetarian food to the dogs

- **Balanced food:** Vegetarian diets are preferable since dogs can meet all their nutritional requirements well on a vegetarian diet.
- **Promotes faster healing:** Vegetarian diets are easier to digest and being a rich source of anti-oxidants, vitamins and minerals can help to promote faster healing after surgery.
- **Eco-friendly:** Another factor that must be borne in mind is that, whenever vegetarian food is served, it is a less energy intensive procedure as compared to production of meat. Therefore, vegetarian food is also more eco-friendly.
- **More humane:** Serving vegetarian food implies that the AWO also gives out a message to the community that it does not support the cruel, practices seen in the factory farming of animals for food.
- **Leading by example:** By serving only vegetarian food in the kennel, the AWO can set an example for the community too to adopt eco-friendly and healthier food choices.

## Storage

The food grains and cereals used for feeding the dogs must be stored in clean, air tight, moisture free containers so that no spoilage or contamination by fungi, yeast or bacteria can occur.

## Cooking and Washing



The utensils used for cooking and serving should not be washed in the same sink or place where the surgical instruments and drapes used for surgery are washed. This is because of the risk of transmission of infections, either via the surgical instruments or through the food utensils. The wash sinks for the food utensils must be separate and at a sufficient distance from the wash sinks for the surgical instruments and drapes. After washing, the surgical drapes must be dried in a sunny, well ventilated area.



As far as possible, cereals and legumes should be cooked using a large pressure cooker. If so, a lot of energy and time can be saved during the cooking process.

### 4.2.4 Energy resources

Ideally, the shelter should be designed in such a way that there is a minimal need for the use of lights and fans during the day. As far as possible, the AWO must use natural lighting for the kennels and the kitchen as well as the other rooms of the shelter. Painting the walls white can help a lot of light to be reflected, thus making the rooms brighter and cooler.

If the AWO has sufficient funds, and the AWO is located in a town or city with access to bright sunshine for most of the year, then installation of photovoltaic panels for electricity generation would be an ideal way to generate energy.



Alternatively, the installation of efficient bio-gas plants that run on bio fuels obtained either from vegetable sources – as in oil seeds like *Jatropha* or *Pongamia* and other vegetable oils or animal dung may be set up. If the AWO houses a large dog population, it may be possible that bio-gas plants running on kennel waste could be used to generate sufficient energy resources for food preparation. If the AWO can arrange to get a regular supply of cow-dung and kitchen waste from a nearby gaushala and from residential areas in the neighborhood, that can also be used for bio-gas generation.

#### **4.2.5 Ventilation**

Making provisions for lots of large windows and open corridors can also improve the circulation of air and increase the ventilation inside the shelter. However, if the AWO is working in a place where the climate is very cold, then care should be taken to keep the shelter well insulated and warm.

#### **4.2.6 Number of Kennels**

It is recommended that 60 kennels be available for an ABC programme that employs one full-time equivalent (FTE) veterinary surgeon. This number will vary however depending on the duration of time that each dog remains at the ABC premises and the volume of work, in terms of dogs caught and sterilizations carried out each month by the AWO.

#### **Calculating the number of kennels needed**

**Example:** An AWO does 5 surgeries / day or 100 surgeries / month

For an AWO that sterilizes 100 dogs / month, which would work out to 5 sterilizations / day and adding 20 working days in an 8 hour shift, at any given time, the total number of kennels required in the shelter can be calculated as follows:

1. If 5 surgeries are conducted daily and the dogs are hospitalized for 5 days post-operatively in individual cages, then a minimum of 25 individual small kennels will be needed to house the 25 dogs who are recuperating after surgery.

Now, assuming that the AWO catches 6 dogs four times a week, then at least 25 individual small kennels or 6 large kennels (if each large kennel can house 4 dogs) will be required to house the recently caught dogs.

A set of 10 spare, individual kennels should be available to house those dogs that fall ill after surgery as well as the dogs that take a slightly longer time for healing. The set of 10 spare kennels can also help the AWO deal with emergencies.

The total number of kennels required would work to 60 small kennels or 35 small kennels plus 6 large kennels.

Adherence to sound surgical protocols, especially aseptic technique should enable the duration of post-operative hospitalisation to be reduced. This will proportionally reduce the number of cages required.

There is increasing evidence that dogs from the same catch location when housed together adjust well with one another. This can greatly reduce the cost of kennel construction.

### 4.3 Operating Facilities

Ideally, the operation theatre must be separate from the preparation room and both the operation theatre and preparation room should be adjacent to one another. The preparation room should have an adequate source of water supply as well as good lighting. Besides, the room must be secure to prevent the dogs from escaping.

However, some AWOs may not have sufficient space to organize for a separate preparation room. In such cases, a part of the operation theatre may be sealed off to make a small preparation cabin where surgical instruments and drapes can be sterilized.

#### 4.3.1 Minimal requirements of a preparation room

- Cupboard to store sterilized surgical packs, sterile surgical instruments, sterile surgical gloves, mask, cap and gown
- Cupboard for storing suture materials, gauze bandages, anesthetics, analgesics, antibiotics and other essential medicines and a weighing machine
- Washing sink with adequate water taps with elbow activated handles
- Good ventilation and lighting
- A 20 litre autoclave that can sterilize at least 8-10 surgical sets at a time. It would be best if the autoclave was kept in a separate room or at least in a well ventilated space to minimize the chances of injuries in case of explosion. The use of autoclave indicator tape should be encouraged. The settings for the autoclave will depend on the manufacturers' instructions – the settings given below may not be suitable for all brands of autoclaves. Therefore it is recommended that manufacturers' instructions on settings be followed and the settings given below be used only as a guideline



**The autoclave settings may be as below:**

Autoclave Settings	Temperature (F)	Pressure (PSI)	Time (min)
General Wrapped Items	250 °F	20	30
Bottled Solutions	250 °F	20	30

#### 4.3.2 Requirements of an Operation Theatre:

**Well equipped:** The operating room and associated preparation room should be well equipped with the basic surgical requirements necessary for the AWO to function efficiently.

**The Operation Theatre must have the following basic equipment:**

1. A strong, sturdy, surgical operating table
2. A bright, light source
3. Instrument tray
4. Kidney Tray

5. Trolley for instruments
6. A cupboard to stock essential medicines
7. An I/V stand
8. UV lamp
9. Air conditioning system (optional, depending on the weather)
10. Refrigerator
11. Emergency medicine kit
12. A surgical scrub sink and wash tap
13. Surgical waste bins

### **Other Key Requirements**

#### **Appropriate protocols**

Both the Preparation room as well as the Operation Theatre should be kept as free of clutter and extraneous furniture as possible to ensure that the highest standards of hygiene can be maintained. Conditions of asepsis and sterility should be maintained at the highest levels.

**Good lighting:** The rooms should be adequately lit so that surgery can be carried out comfortably. Provision should be made for emergency lighting in the event of electricity failures.

**Adequate water supply:** Care should also be taken to make sure that the operation theatre and preparation room have a sufficient number of functional sinks and taps, with an adequate water supply. This is vital so that the surgical team can carry out 'scrubbing up' procedures diligently. In case, water supply is restricted to specific hours of the day, provisions should be made for storing a sufficient volume of water in the tanks.

#### **4.3.3 Minimal Equipment needed to carry out the ABC Programme**

There should be sufficient sets of surgical equipments available. A minimum of one pack per operation is required. Colour coding of surgical packs to distinguish between those used for spaying bitches and those used for castrations may be helpful. Instruments used will depend on the surgeon's preference but sufficient instruments should be available to cope with any emergency that may occur while undertaking sterilization surgery. Colour coding of the different fenestrated surgical drapes used for spays and castrations is recommended. Adequate facilities should be available to clean the surgical equipments. An autoclave is essential to sterilize instruments for surgery. The use of autoclave indicator tape is recommended to ensure that instruments are adequately sterilized. Surgical instruments and surgical drapes must be thoroughly washed and cleaned prior to autoclaving.

#### **The Surgical pack for female dogs should have the following:**

- Straight scissors - 1
- Metzenbaum scissors - 1
- Adsons tissue forceps - 1
- Babcock tissue forceps - 1

- Kelly / Carmalt / Mosquito hemostatic forceps - 3 pairs of any one
- Spay hook - 1
- Towel clips - 4
- Mayo-Hegar needle holder - 1
- Scalpel handle No 3 - 2
- Scalpel blades No 10 – 2
- Sterile gauze swabs: 8 pieces
- Curved needle – 1
- Straight needle - 1
- Allis tissue forceps 2

#### **Suture material**

- Catgut – 1-0
- Vicryl – 1-0 and Vicryl - 2-0

#### **The Surgical pack for male dogs should have the following:**

- Straight scissors - 1
- Metzenbaum scissors - 1
- Adsons tissue forceps - 1
- Babcock tissue forceps - 1
- Kelly / Carmalt / Mosquito hemostatic forceps - 3 pairs of any one
- Towel clips - 4
- Mayo-Hegar needle holder - 1
- Scalpel handle No 3 - 2
- Scalpel blades No 10 – 2
- Sterile gauze swabs: 4 pieces

#### **Suture material**

- Catgut – 1-0
- Vicryl – 1-0

#### **The Emergency Kit should contain the following:**

- Atropine 1 ml ampoules (10) / 10 ml vial (1 box)
- Yohimbine (Xylazine reversal agent) 10 ml: if available
- Adrenaline 1 ml ampoules (10) / 10 ml vial (1 box)
- Ringers lactate (450 ml) – 5 bottles
- Dextrose normal saline (450 ml) – 5 bottles

- Dexamethasone 2 ml ampoules (10) (1) / 30ml – (1 vial)
- Diphenhydramine maleate - 30 ml - (1 vial)
- Terbutaline sulfate - 1 ml ampoules (10)
- Doxapram - 20 ml - (1 vial)
- Methylprednisolone sodium succinate - 20 ml - (1 vial)
- Sodium bicarbonate 8.4% solution - 100 ml (5 vials)
- Styptic like Botropase 2 ml ampoules (10)
- Chlorpheniramine maleate – 30 ml vial (1)
- Gauze Rolls (sterilized) – 10 cm – 10
- Cotton Rolls - 1
- Swabs - 20
- Disposable syringes (10 ml) - 2
- Povidone iodine – 450 ml bottle – (1)
- Disposable Syringes (25 ml) (Disposable) – 2
- Disposable Syringes (5 ml) (Disposable) – 2
- Disposable Needles – (22 gauge) – 1 dozen
- Butterfly needle with scalp vein – 2
- I/V sets – 2
- Torch – 1
- Paper tape - 1 roll
- Stethoscope
- Forceps – 2 Pairs
- Scissors – 2 Pairs
- Thermometer

There should always be available at least two sterile surgical kits to carry out any emergency surgeries.

#### 4.3.4 Personnel

The number of people to be employed by the AWO must be calculated based on the volume of work that is to be done.

For an AWO that undertakes 200 ABC surgeries and 200 anti-rabies vaccinations per month, the following personnel should be employed:

1. One Veterinary Surgeon who can do the FTE (full time equivalent) work of 40 hours / week
2. One Veterinary Surgical Assistant – Paravet, Veterinary Nurse or an experienced Veterinary Assistant
3. Two dog caretakers or attendants who will attend to the catching, transportation, feeding, exercise and post-operative care of the dogs.

## 4.4 Anti-Rabies Vaccines

### 4.4.1 Vaccination

It is vital that all staff involved in an ABC programme are properly vaccinated against rabies. A pre-exposure prophylactic course consisting of tissue cell culture vaccine should be given on days 0, 7 and 21 or 28. Yearly boosters are recommended. Monitoring of the antibody titres of staff by annual blood sampling is recommended but may be difficult to arrange.

### 4.4.2 First Aid for dog bites

The dog handling staff should be well trained in following proper guidelines on cleaning and dressing dog bite wounds.

**The dog bite should be cleaned in the following manner:**

**Step 1:** The most important step is to allow a gentle stream of running water to flow through the dog bite wound for at least 15 minutes, to allow for mechanical removal of any virus particles, if present.

**Step 2:** Then, the wound must be given a thorough wash with a disinfectant soap, detergent or povidone iodine. This should be followed by washing of the affected area or swabbing the area with a gauze dipped in an iodine based compound like povidone iodine or a chlorehexidine wash. Applying spirit on a raw area can cause a strong burning sensation.

**Step 3:** An immediate visit to the doctor for the relevant post-bite treatment with vaccines and immunoglobulins should be followed as per the WHO recommended regime.

### 4.4.3 Vaccine Storage

It is important to remember that for the anti-rabies vaccine to work effectively, the vaccine must be refrigerated. If the vaccine is kept at room temperature for more than a few minutes, the quality of the vaccine will deteriorate and it will not be effective. Care should be taken to ensure that the vaccine is kept refrigerated at all times, except just before use.

In areas with frequent power failures, provisions for a continuous supply of power must be made. If such a power supply is not available in the AWO, then the anti-rabies vaccine must not be stored on the premises of the AWO. A reliable alternative arrangement must be made, either by storing the anti-rabies vaccine with the supplier or at any other suitable place, where the cold chain can be maintained.



## **Section 5**

### **KEY ELEMENTS OF A SUCCESSFUL ABC PROGRAMME**

- **5.1 Identification of stray dogs while being caught**
- **5.2 Permanent identification methods**
- **5.3 Record Keeping**
- **5.4 Monitoring Programme effectiveness**

# SECTION 5

## KEY ELEMENTS OF A SUCCESSFUL ABC PROGRAMME

### Developing Good Systems for Proper Identification, Record Keeping & Monitoring

An ABC Program that lacks good identification methods, record keeping techniques and monitoring systems will not be able to function efficiently. This is because if information about the dogs that have already been sterilized in an area cannot be easily obtained and the sterilized dogs cannot be identified, then the AWO may end up spending a lot of effort, time and valuable resources in a futile task of catching dogs that have already been sterilized.

Similarly, without an effective monitoring system in place, it is not possible to find out whether the ABC Programme has been able to clearly meet its objective of reducing the stray dog population in the area and along with that in bringing down the number of dog bite cases.

With respect to identification methods, the use of permanent identification techniques like ear notching with a reliable numbering system can be of great value in ensuring that the ABC Program is executed efficiently.

#### 5.1 Identification of stray dogs while being caught

It is mandatory that for an ABC programme to be effective, that the vaccinated and sterilized dogs are released back to the exact address from where the dogs were caught. Doing so can help to ensure that the ABC program being carried out by the AWO is really effective in controlling and stabilizing the dog population of the particular area that the AWO has been given responsibility for. Releasing the dogs back at the 'correct addresses' from where they were originally caught, can also prevent 'territorial adjustment issues and dog fights'. It follows then, that a system is thus required to ensure that each animal caught is correctly identified and released back into the neighborhood that it belongs to.

**The following methods of identifying the dogs have been found to be useful:**

##### 5.1.1 Collars: Area specific color coding or number coding

In this system, collars with specific colours or numbers are secured around the dog's neck at the time of catching. Each area is given a specific colour or number. For example, if Thiruvanmiyur area is coded blue or given a number code as TN12, then the dogs that are caught from this area, should all be wearing, either a blue collar or a collar that begins with the number series TN12 (which could be in a progressive sequence as TN12-01, TN12-02, TN12-03 and so on).

##### Benefits

- Simple and easy to use provided the color coding or number coding is followed correctly.

##### Drawbacks

- A limiting factor of this method is that when color coding of collars is carried out, the company that manufactures the collars may not provide a sufficient range of distinctly different colors so as to provide easy identification.



- This method requires access to the dog's neck and may be difficult to apply when the sack or net method of catching dogs is used.
- It is useful as a temporary method of identification when the dogs are housed at the ABC Centre but not as a permanent method of identification since the collars can be easily removed.

### **5.1.2 Coloured Dyes**

The use of colored dyes can be practised in a manner similar to the collar identification method, the only difference between the two methods being, that instead of collars, colored dyes are used.

#### **Benefit**

- It is simpler to use than the collars, since the colored dyes can be easily streaked /dusted on the back of the animal, at the time of catching.
- Due to its ease of use, this method of identifying the dogs can be efficiently implemented even by dog handlers with poor literacy skills. This system of identification could be used to identify the dogs at the time when they are caught which could then be followed by a more permanent method of identification.

#### **Drawbacks**

- Here too, the number of addresses from which it is possible to catch dogs is limited by the number of coloured dyes available.
- A major disadvantage of this method is that when dogs from different areas are caught and transported by the same van, then there are chances that the dogs may rub the dye off or onto the bodies of other dogs. This may cause confusion in correctly identifying the area that the dog was caught from.

### **5.1.3 Numbered Tagging**

In this system, each dog receives 'a unique number identification tag' at the time of 'catch or release'. This number is then recorded in a log book along with details of the exact address from which the dog bearing that number came from.

#### **Benefits**

- This method allows for a large number of dogs caught from different locations to be recorded.
- The numbered tagging system is particularly suitable for identifying dogs caught by the butterfly net technique. As with collars, these tags can be reused on future catching expeditions.

#### **Drawback**

- However, the use of this method requires that the dog handler be literate, have good recording, sorting and organizational skills while dealing with a lot of numbers.

### 5.1.4 Written Descriptions

Each animal caught is identified based on coat colouring and type, sex and age and is recorded along with the address from which the dog was caught.

#### Benefit

- This method is easy to apply.

#### Drawbacks

- The method requires standardization of descriptions used between all team members involved in the ABC project.
- Besides, it is vital that at least one team member of the dog catching team be literate and have good observational and recording skills.

It's important to note here that one or more techniques could be used simultaneously to give foolproof results. If the technique of using written descriptions matches with the tag number and with the colored dye used, relocation errors will be considerably minimized. Besides, such a measure will also permit subsequent, safe release of the operated dog, back into the neighbourhood that the dog belongs to.

## 5.2 Permanent Identification

The marking methods referred to above serve to establish a correct association between the dogs caught and the addresses from where the dogs were caught. A permanent method of marking dogs is vital to prevent the same animal from being caught and subjected to surgery twice. This is especially essential with the female street dogs as no outward sign of the sterilization surgery will be visible once the animal has recovered fully and the coat has regrown.

### 5.2.1 Ear Notches



Fig 2: Illustration of notch on the pinna of the ear

The preferred method of permanent marking of sterilized and vaccinated dogs in an ABC program is by marking a distinctive 'V' shaped notch on the pinna / border of the right ear, immediately after the sterilization surgery while the animal is still under general anaesthesia. The marking can be easily done by using sterile surgical clamps and a sterile surgical blade along with potassium permanganate or silver nitrate to stop the bleeding. Ear notches should be visible but should not be too large so as to affect the anatomy of the pinna. The notched ear should receive daily antiseptic dressing.

Alternatively, a thermocautery device can be used to cut and seal the notch. The exact location and type of the ear notch to be made should be agreed upon by the team members. This is particularly important in areas where several ABC programmes are happening simultaneously, as seen in big cities, where the chances of overlap occurring is high.

#### Drawback

Ear notches are not very effective in identifying sterilized dogs from a long distance, especially in dogs with hairy or fluffy ears.

## **5.2.2 Other Methods**

Individual tattoos with alpha numeric coding can also be used to identify individual dogs. The tattoos, whether marked on the ear flaps or on the inner thigh, however cannot be seen from a distance. Microchip technology implanted under the skin is effective for identifying dogs at close quarters but is not useful when the identification has to be carried out from a distance. Besides, the technology is expensive and not easily accessible to AWOs in India.

## **Record Keeping**

### **5.3 General Considerations**

It is imperative to maintain proper records to ensure that the ABC program being undertaken by the AWO is functioning at the highest levels of integrity, discipline, dedication and efficiency. Records must be maintained on a daily basis with all the data filled in completely. It is also very important to ensure that the operated dogs are correctly released back into the neighbourhoods that they belong to.

Records also enable specific areas of the ABC programme to be examined in detail. Doing so can help to give a clear-cut assessment of the challenges faced as well as those that were successfully resolved. Such an analysis can also help AWOs modify their programs and implement corrective systems in place, based on the lessons learnt from earlier experiences.

#### **5.3.1 Essential registers that should be maintained by the AWO is listed as below:**

- Pick up and Release Register
- An Operation Theatre Register
- Post-operative Care Register
- An Inventory Register
- A Medicine Stock Register

The 'Pick up and Release' register as well as the 'Operation Theatre' register should be updated daily. Care should be taken to ensure that, Veterinarians as well as the Para-veterinary staff sign the 'Operation theatre' Register as well as the 'Post-operative care' Register daily. All the data needs to be filled in correctly, completely and regularly. It is also very important to ensure that operated dogs are correctly released back to the addresses that they belong to. The Medicine Stock Register may be updated on a weekly, monthly or fortnightly basis. The formats for maintaining records in the different registers are listed in the Annexures listed at the end of this Manual. Bills of all medical and surgical items purchased should be kept carefully in a separate folder.

#### **5.3.2 Accounting Records**

In addition to clinical records that detail out the progress of dogs through the ABC programme, a medical stock register should be maintained and a suitable transparent and traceable system should be developed for recording the supply of medicines from stock. All bills and receipts related to medicines, equipments, food and other consumables used and details of salaries etc. paid in the ABC programme should be kept in carefully numbered files. The accounts must be maintained and the monthly and yearly accounts drawn up according to the highest standards of accounting ethics and protocols.

## **5.4 Emphasis on systematic area wise efforts and female sterilizations**

While carrying out the ABC Programme, emphasis should be given to ensure that the sterilizations are carried out as a well planned, area wise, systematic initiative.

### **5.4.1 Area wise Effort**

Evidence suggests that ABC programmes will be most effective if undertaken area by area in a town or city rather than spreading the same efforts, thinly over all areas. Area-wise catching allows for more efficient utilization of staff, vehicles and fuel resources during the coordination of both, the catching as well as the release of the stray dogs.

### **5.4.2 Female centred Approach**

- In order to control the population, an ABC programme must concentrate exclusively on sterilization of the female dogs. A ratio of 70% female sterilizations to 30% male sterilizations has been proposed, though in the first year of an ABC programme, females should make up 90-100% of the sterilizations undertaken by the AWO during that year.
- Notwithstanding the female centred approach advocated above, some males may need to be castrated to limit rivalry and fighting, especially during the breeding season, and to reduce the incidence of transmissible venereal tumour.
- Sterilization effort on females that are very fertile and known to regularly produce a large litter every breeding season will yield faster results for the ABC programme.
- At least 70% of the dog population must receive anti-rabies vaccinations.

## **5.5 Monitoring Programme Effectiveness**

Monitoring the effectiveness of an ABC Programme is critical in understanding whether implementation of the ABC Program has been effective in controlling the stray dog population as well as in minimizing the incidence of dog bites and cases of rabies in the area.

This can be done at two levels: at the individual level and at the population level

### **5.5.1 Individual Monitoring**

#### **a. Monthly Recovery Times**

Records should be maintained of all pertinent facts relating to the dog's stay in the programme. These should be compiled from the daily operation list details, releasing list data, check lists and kennel cards. Monthly average recovery times in days (operation to release) should be calculated. These figures must then be plotted graphically by sex and critically examined. By doing so, patterns or problems can be seen as they arise.

#### **b. Recovery Times by Surgeon**

The surgeon should review the surgeries that he or she has carried out periodically. Depending on the number of dogs sterilized at the Centre, the reviews may be carried out every month, once in two months, or on a quarterly basis. An ideal starting point for the surgeon to carry out the review would be upon completion of 100 surgeries or more. That way, the surgeon would have a large enough sample size to make significant inferences.

An excellent way to monitor the success of the ABC Programme from a surgical perspective would be to calculate the average recovery times of male and female dogs separately for each surgeon. The surgeries carried out by different surgeons should be reviewed separately to mark out clear differences in performance efficiency between different veterinary surgeons conducting the ABC surgeries. For the Animal Welfare Organization carrying out the Programme, such a review can serve as an excellent clinical audit to evaluate efficiency at the operating table.

#### **c. Influence of Paravets and Veterinary Assistants**

Records should also be maintained of the involvement of the Paravets who are involved in assisting in the ABC surgery, either as scrubbed operation assistants, or in the role of anaesthetist etc. For example, if one of the Paravets participating in the ABC Programme does not follow prescribed conditions of asepsis, then the chances of abscesses and delayed wound healing occurring during his or her participation in the ABC surgery may be higher than a Paravet who is following all the standards norms of hygiene and asepsis. Therefore, just like the records maintained for the Veterinary Surgeon, the data for the Paravets may be maintained and similarly analyzed. It is by carefully analyzing such information that it may be possible to determine the cause of some temporary problems occurring in the ABC programme, such as an increased incidence of ear notch abscesses and anaesthetic deaths. Once problems have been identified and the cause discovered, appropriate steps can be taken to rectify the problem.

#### **d. Post Mortem Examinations**

All dogs that die unexpectedly after surgery should be subjected to a post mortem examination. This helps to ascertain the cause of death, and thus whether the death may be directly attributed to the surgery (through surgical error), the anaesthetic; or to some underlying or pre-existing disease. This information allows for better decisions on the fate of dogs entering the ABC programme, and for reviews of surgical and other techniques.

### **5.5.2 Monitoring of the Population**

This is done through regular population surveys and other methods to establish information about the population and the effects of our programme upon it.

#### **a. Breeding Information**

By recording the incidence of pregnancy or oestrus, some information on the breeding behaviour of street dogs in that particular area can be obtained. Similarly, records may also be maintained of the numbers of foetuses which are aborted by the surgery and thus the average litter size.

#### **b. Migration Data**

It may not be very uncommon to see dogs that have been sterilized in one area have migrated to another area. Sometimes, the AWO may catch the same dog again by mistake. If this happens, it should be used as an opportunity to note the identification number and correlate the data with the release site and release date of the dog. By recording this information, it may be possible to make some inferences about the possible migration of the dogs to different area.

#### **c. Population Monitoring**

The AWO conducting the ABC Programme should carry out regular bi-annual dog population counts in the area where the AWO is carrying out the ABC Programme. Doing so can provide a

good way to gauge the efficiency of the ABC Programme in significantly reducing the dog population figures in that area.

**d. Rabies Monitoring**

Records of the number of rabies cases reported in the area should be obtained by the AWO and annually, these records must be checked to find out if the incidence of the rabies in the area has reported a significant decline. Efforts must also be made to validate the cases reported as rabies by visiting the affected families and recording the case histories accurately. If possible, efforts should be made to carry out rabies titer monitoring in already vaccinated dogs (the dogs may be randomly sampled from different parts of the city). Vaccine manufacturing companies like Indian Immunologicals in Hyderabad and other companies may be approached for their support and assistance.

All confirmed cases of Rabies must be reported by the Animal Welfare Organization to the local Institute of Preventive Medicine or the nearest regional Rabies Monitoring Institute. The location from which the animal was picked up, the number of people and animals recorded to have been bitten, whether anti rabies was administered to the victims etc, whether they were quarantined etc, must be followed up on and complete details should be provided.

**e. Animal Welfare Monitoring**

One way to monitor whether the spayed and sterilized dogs are in a better condition with better public awareness prevalent in the community would be to record the number of diseases seen among the captured street dog population. By comparing the incidence rates of two commonly occurring diseases in two distinct areas of the city covered by the programme, one where the programme has been working for some years and the other from a new area into which the ABC programme has been expanded, it is possible to draw valid inferences.

**f. Education and Public Awareness Monitoring**

If the outreach and education programme conducted by the AWO has been successful, there will be a marked increase in the number of volunteers, donors and members of the community visiting the shelter to volunteer their time and resources. Besides, when an AWO's awareness programme has been successful, with each passing year, a steady increase in the number of 'dog carers' in different parts of the neighborhood will also be seen. Additionally, schools and colleges in the vicinity may also come forward and strengthen the ABC Programme by sending students to volunteer their time.



## **Section 6**

# **PREOPERATIVE CONSIDERATIONS**

- **6.1 Preliminary checks**
- **6.2 Pre-surgical checks**
- **6.3 Pre-operative preparations**
- **6.4 Preparation for Surgery**

# SECTION 6

## PRE-OPERATIVE CONSIDERATIONS

### Vital Checkpoints: Pre-surgical Checks, Pre-operative Preparation and Fluid Therapy

Ensuring that the stray dog selected to undergo the sterilization is 'fit for surgery' is essential if the surgery has to be successful. Dogs suffering from a serious bacterial or viral infection can put all the animals in the shelter at risk of being infected.

As a rule, if any stray dog that has been caught by the dog catcher displays visible clinical signs of illness, such as extreme emaciation, pallor, weakness or skin conditions like mange, the dog should be first treated for the condition in the veterinary hospital run by the AWO. If the AWO does not have facilities to run a full fledged veterinary hospital with proper inpatient wards and personnel attending to the patients, the AWO should immediately rush the ill animal to the nearest veterinary hospital where such facilities are available.



Giving the dogs a thorough checkup prior to surgery can help filter out the dogs that are unhealthy and are not fit for surgery, thus minimizing the chances of post-surgical deaths and delayed post-surgical healing. Careful adherence to the pre-operative procedure can minimize the dose of the anesthetic needed as well as ensure that the operated dog has a safe recovery from the effects of anesthesia.

Fluid loss during surgery can cause a great deal of stress to the animal and may cause severe dehydration and shock, even leading to death if there has been severe hemorrhage from any of the ligated blood vessels. Giving an adequate quantity of intravenous fluids (NSS-Ringer lactate) during the surgical procedure will help ensure that the dogs' tissues are adequately perfused and thus minimize the risk of surgical shock.

### 6.1 Preliminary Checks



**Prior to commencing sterilization surgery, the veterinary surgeon should check**

- that the records of dogs and the dogs in the kennels are in agreement;
- the clinical condition of dogs for surgery;
- the preparedness of the operation theatre and preparation room;
- the sterility of surgical instruments and equipment;
- the availability of the required medications and;
- the physical environment in which the anaesthetized animals will recover (hypothermia is a severe problem in anaesthetized animals and it is essential that the dogs are kept warm during the immediate post-operative recovery period).



If any of the above is found wanting or deficient, steps should be taken to improve the situation, or the surgeries should be postponed until the conditions are made professionally acceptable.

## **6.2 Pre-Surgical Checks**

Every dog at the shelter that will receive anesthesia and undergo surgery should be given a thorough pre-surgical check by an experienced veterinary surgeon. It is essential to carefully examine each dog prior to surgery to ensure that the concerned animal is in a state of fitness to undergo surgery.

**The key clinical parameters to be monitored are as below:**

- Temperature
- Respiration
- Pulse
- Color of the mucus membranes
- Palpation of regional lymph nodes
- Auscultation of chest to rule out any infection of the lungs as well as to identify cardiac rate and rhythm abnormalities
- Signs of external injury e.g. fractures and wounds, skin conditions like mange etc.
- Abdominal palpation to rule out pregnancy, ascites, liver and splenic condition.
- It is only after the veterinary surgeon has confirmed that the above parameters have been checked and found to be normal, that the dog can be considered, 'ready for surgery'.
- Incurably sick and mortally wounded dogs should be considered for euthanasia.

## **6.3 Pre-Operative Preparation**

### **6.3.1 Preparation of surgical packs:**

- Dry instruments should be laid on a dry wrap. A useful technique is to feed one of the handles of all instruments with finger-loops, other than the towel-clips, through the shaft of the longest instrument (frequently the needle-driver)
- An appropriate number of swabs should be included in the kit. The swabs should be folded over the ends of the instruments to avoid puncture of the wrap.
- The wrap is then folded once, longitudinally.
- A hand towel is then laid.
- The final folding is performed and the wrap secured with a small piece of autoclave tape.
- Ideally this inner-wrap is then covered with a second wrap, and the autoclave tape applied as before.
- The pack is identified and dated (by writing on the tape) and placed ideally in the autoclave.

- Time / temperature relationships for steam under pressure:

The following are times at which materials being sterilised must be maintained at the target temperature. This does not take into account time for penetration by steam or 'heat-up lag'.

- 3 minutes at 134<sup>0</sup>C (273.2 deg F) 29.4 psi
- 15 minutes at 121<sup>0</sup>C (249.8 deg F) 15 psi

### **6.3.2 Preparation of the Patient prior to surgery**

#### **a Withholding of food**

The dogs selected to undergo surgery should not be given food for 12 hours to reduce the dogs' risk of vomiting and pulmonary aspiration while undergoing general anaesthesia. A shorter fasting time for weak dogs and puppies is recommended. Water should be available to the dogs.

#### **b Pre-medication**

Prior to anaesthesia, the dogs should receive pre-medication with a sedative agent. Doing so will help to reduce the total amount of anaesthetic that is required and will also help to keep the animal quiet and suitable for induction.

#### **c Analgesia**

Prior to surgery, pre-emptive analgesia such as meloxicam should be administered. This is because pain relief given before painful stimuli is experienced is more effective than pain relief given after pain has begun.

#### **d Antibiotic use**

Pre-operative use of antibiotics can be considered. For sterilization surgery done under suitable conditions of asepsis, the use of antibiotics may not be necessary. In less than ideal conditions, a long acting antibiotic could be considered. The use of antibiotics has to be done judiciously and should be decided on a case by case basis by the veterinary surgeon.

#### **e General Anaesthesia**

General anaesthesia should be administered and the dog must be monitored continuously, to ensure that an adequate depth of anaesthesia is reached so that the surgery can be safely performed. Once anaesthetized, and throughout the anaesthesia, the patient should, if necessary, be protected against hypothermia.

## **6.4 Preparation for Surgery**

### **6.4.1 Patient Preparation for Surgery**

- Anaesthetic induction, shaving and prepping must be performed on a separate table other than the surgery table, to minimise contamination.
- If intravenous fluids are to be administered, the catheter site should be shaved and prepped as described for the surgical site below. The catheter is then inserted and the primed intravenous line connected.
- The bladder should be palpated and expressed if necessary and genitalia examined for presence of Transmissible Venereal Tumour (TVT).

- The surgical site should be widely and carefully shaved, avoiding trauma to the area; even small cuts can lead to wound infection.
- The site should be thoroughly cleaned with Chlorhexidine solution. Multiple pieces of cotton-wool should be used in turn, commencing at the centre of the area and moving towards the periphery of the shaved area, and never back into the centre, otherwise the wound will be re-contaminated.
- Avoid wetting non-shaved areas of the patient.
- Once the shaved area appears free of gross dirt and hair, and the pieces of cotton wool used come off the skin with no staining, then the site can be considered clean, but NOT disinfected at this point.
- Disinfection of the site is achieved using three spray-applications of surgical spirit - one minute between applications. A final spray of Povidone iodine solution may also be applied, but only once after the spirit has evaporated and the skin is dry. Do not touch the skin during this process, otherwise adequate disinfection will not be achieved. Once again, avoid wetting the non-clipped areas as this may lead to 'run-off' and contamination of the site.
- The patient is then transferred to the surgery table: in so-doing, take care not to contaminate the prepped area with your hands or non-disinfected parts of the patient.
- The prep table should then be carefully cleaned with an appropriate disinfectant, such as Lysol solution.



#### 6.4.2 Preparation of Operating Table for Surgery

- A clean, fenestrated plastic sheet (previously sprayed on both sides with surgical spirit, and allowed to dry) is then placed on top of the patient, be careful that the plastic does not come in contact with the prepared area.
- If the surface of the table is exposed where the surgical kit is to be placed, a second sheet of plastic should be laid, overlapping with the first. This is to stop 'strike-through' contamination of the surgical instruments (especially with urine or faeces).

#### 6.4.3 Preparation of the Surgeon for Surgery

- Clothing: the surgeon should wear clean and fluff-free, loose-fitting clothing, the top must be short-sleeved to enable appropriate scrubbing as far proximally as the elbow.
- Ideally a surgical hat and mask should be worn; at the very least, long hair must be tied-up and facial hair closely-trimmed.
- Finger nails must be cut short.
- Should the surgeon have an infected wound or sore on the hands or forearms, it is preferable that surgery be postponed until such time as this has healed.

#### 6.4.4 Surgical Scrub:

An acceptable germicidal preparation, e.g. Chlorhexidine or Betadine, must be used and scrubbing should be carried out for a minimum of 5 minutes with Chlorhexidine, followed by scrubbing with Povidone Iodine.

##### Scrubbing:

- The hands and arms are washed first with the scrub mixture to remove any gross contamination.
- The nails are cleaned next, before the scrubbing procedure begins
- A sterile brush is used to scrub:
  1. the fingers
  2. the hands
  3. finally, the arms

- in that order, scrubbing over a period of no less than 3 minutes. Once the brush has been used on the arms, it should not return to the fingers. Each finger should receive ten strokes on each surface, making a total of forty strokes per finger. The fingernails and both surfaces of the hands should receive twenty strokes. The number of scrubbing strokes is far more important than the time spent scrubbing.

- **Rinsing**

When scrubbing is completed, the hands, arms and the brush should be rinsed in water, allowing the water to drip from the elbows to prevent contamination of the hands with drips from upper arms.

- **Drying of hands**

Two sterile hand towels are provided. The first towel is unfolded and used to dry thoroughly the fingers, hand and forearm (in that order) of one arm, taking care that the fingers of the hand holding the towel do not contact the skin of the other arm. The second towel is used to dry the other hand and forearm in identical fashion.

- **Alcohol Spray**

With the hands held above the level of the elbows, surgical spirit should then be sprayed on the hands and then the forearms, and allowed to dry.

#### 6.4.4 Opening of instrument pack



A non-scrubbed assistant will then present the kit to the surgeon in one of two ways, depending on whether the kit was double (preferable) or single-wrapped:

- **Double-wrapped:** the outer wrap will be held and opened by the assistant; the surgeon will then remove the pack, handling only the inner wrap, place it on the plastic sheeting covering the table and patient and then unwrap the kit. Care must be taken, at all times, not to touch the plastic, the table or the patient as these are not sterile areas.

- Single-wrapped: the assistant will place the kit on the plastic covering the table and will unwrap the first fold only. The surgeon may then completely unfold the wrap, taking care to handle only the sterile aspect of the wrap.

#### 6.4.5 Preparation of surgical site



A large area around the site of the proposed surgical incision should be shaved (or clipped) and cleaned using chlorhexidine or povidine iodine solution. Thorough cleansing should be repeated a number of times before placing the fenestrated drapes.

#### 6.46 Fluid Therapy Protocol

A careful inspection of the veins on the forelimb and hind limb must be made. Once the vein to be used has been selected, the area around the vein must be thoroughly swabbed and cleaned with surgical spirit or povidone iodine. Care should be taken to see that the selected vein is properly dilated. It is a good practice to use a catheter.

An intravenous line can also facilitate additional quantities of anesthetic to be administered as and when required, without any time loss. The exact dose of the pre-medications, analgesic, antibiotics and i/v fluids given should be at the professional discretion of the veterinary surgeon, based upon local conditions and experience.

#### Intra-operative intravenous fluid administration

This generally works out to an average volume of 150-200 ml of Ringer's lactate solution or 0.9% Normal saline. Giving I/V fluids during surgery is recommended as it will minimize the risk of surgical shock.

#### Indications:

- Debilitated patient
- Very young patient: poor homeostatic response
- Prolonged procedure
- Procedures associated with high risk of intra-operative complication
- Procedures likely to require intra-operative administration of intravenous medications

**NB:** Ideally fluids should be administered at body temperature

**Choice of fluid:** Lactated Ringers Solution

**Rate of administration:** Routine procedure: during surgery: 20-40ml/kg/hour



## Section 7

### **SURGERY FOR ABC PROGRAMMES**

- **7.1 Anesthetic and Surgical protocols**
- **7.2 Ear notching**
- **7.3 Sterilization surgery: General considerations**
- **7.4 Surgical procedure for spaying female dogs**
- **7.5 Male surgical sterilization**
- **7.6 Cleaning of used kits and drapes**
- **7.7 Safe disposal of surgical waste**

# SECTION 7

## SURGERY FOR ABC PROGRAMMES

### Anesthetic & Surgical Protocols

The particular combination of anesthetic and pre-medication to be used is a choice that should be made by the Veterinary Surgeon in charge of the ABC Programmes at the Animal Welfare Organization.

#### 7.1 Good anesthetic protocol should achieve the following:

1. Loss of consciousness that permits surgical procedures to be carried out
2. Sufficient degree of sedation, analgesia and muscle relaxation
3. Maintenance of adequate cardiac function at optimal levels
4. Adequate ventilatory and respiratory support

The cephalic vein of the forelimb or the saphenous vein of the hindlimb may be used to give intravenous anesthesia while medications to be given intramuscularly may be given in the cranial thigh muscles, so as to avoid sciatic nerve injury. Administration of Meloxicam @ 0.1 - 0.2 mg/kg bw by intravenous route 20 minutes prior to induction of anesthesia can help to significantly reduce post-operative pain.

#### 7.1.2 Anaesthetic protocols

Some recommended combinations are listed as below:

##### Anesthetic Protocol 1

##### Xylazine-Atropine-Ketamine-Diazepam

##### Pre-medication

- Xylazine @ 1mg / kg bw (administered intramuscularly - maximum dose 1 ml)
- Atropine @ 0.04 mg / kg bw (however, there is increasing evidence that atropine should not be given as a premedication and should only be administered following induction to maintain cardiac output)

**Induction:** To be given ten minutes after administration of Xylazine and Atropine

- Ketamine @ 2.5 mg / kg bw + Diazepam @ 0.25 mg / kg bw

Mix equal volumes of ketamine (50 mg/ml) and diazepam (5mg/ml) and in the same syringe

Dose: 1 ml of the mixture per 10 kg bw, given slowly intravenously to effect, to premedicated dog  
(Ref: BSAVA Manual of Small Animal Anaesthesia & Analgesia)

## **Maintenance**

Increments to be given at half the induction dose

## **Fluid Therapy**

- Ringer's Lactate should be administered by I/V route throughout the surgical procedure.

## **Respiration**

Open mouthed with gag and spontaneous respiration / via endotracheal tube

Endotracheal tube inserted and cuff inflated if necessary.

## **Anesthetic Protocol 2**

### **Triflupromazine / Atropine / Thiopentone or Xylazine / Atropine / Thiopentone**

#### **Pre-medication**

- Triflupromazine @ 1mg / kg bw or Xylazine @ 1 mg / kg bw
- Atropine @ 0.04 mg / kg bw

**Note:** The combination of Xylazine-atropine-thiopentone is not considered safe for old, weak and young patients and it is recommended that Protocol 2 be used only by an experienced vet.

#### **Induction**

- Thiopentone @ 25 mg / kg bw I/V

(Note: peri-venous administration of thiopentone sodium will cause severe local reaction and must be treated by local infusion of at least three times the volume of sterile saline; this risk can be reduced by the use of a 2.5% solution and by ensuring that thiopentone sodium is given by intravenous route only)

#### **Maintenance**

- I/V Thiopentone at half the induction dose may be repeated as small I/V boluses but will lead to prolonged anesthesia and longer recovery time.

#### **Fluid Therapy**

- Ringer's Lactate should be administered by I/V throughout the surgical procedure.

#### **Respiration**

Open mouthed with gag and spontaneous respiration

## **Anesthetic Protocol 3**

### **Use of inhalation anaesthesia**

#### **Pre-medication**

- Xylazine @ 1mg / kg bw
- Atropine @ 0.04 mg / kg bw I/V



## Induction

- Ketamine @ 2.5 mg / kg bw + Diazepam @ 0.25 mg / kg bw or
- 4 % Isoflurane or
- Thiopentone sodium @ 20 mg/ kg bw I/V

## Maintenance

- 2 % Isoflurane with Oxygen via Endotracheal Tube

## Fluid Therapy

- Ringer's Lactate should be administered by I/V throughout the surgical procedure

**Note:** For additional protocols, kindly refer to the IFAW recommended protocol for General Anesthesia listed in the Annexures at the end of this Manual. Some of the medications listed in the protocol are not currently available in India. However, this may be of use in future.

## 7.2 Ear Notching

All sterilized dogs, irrespective of their sex are to be compulsorily ear-notched with a visible 'V' cut on the pinna of the right ear, immediately after surgery by using an electric cauterizer for easy identification of the sterilized dogs after surgery.

## 7.3 Sterilization surgery: general considerations

The choice of surgical approach is at the discretion of the veterinary surgeon. In general, a familiar technique is better than one with which the veterinary surgeon is unfamiliar.

As with all surgery, great attention must be paid to ensure that Halsted's Surgical Principles are diligently followed which includes:

- Complete asepsis;
- Accurate haemostasis;
- Careful tissue apposition;
- Gentle tissue handling;
- Obliteration of dead space;
- Post operative rest.

It is unacceptable to say that strict asepsis is not required because street dogs have good immune systems. Lack of care during the preparation for surgery of both, patient and surgical team, and during surgery itself, will lead to greater inflammation and infection than necessary and thus more pain and poorer welfare for the operated dogs.

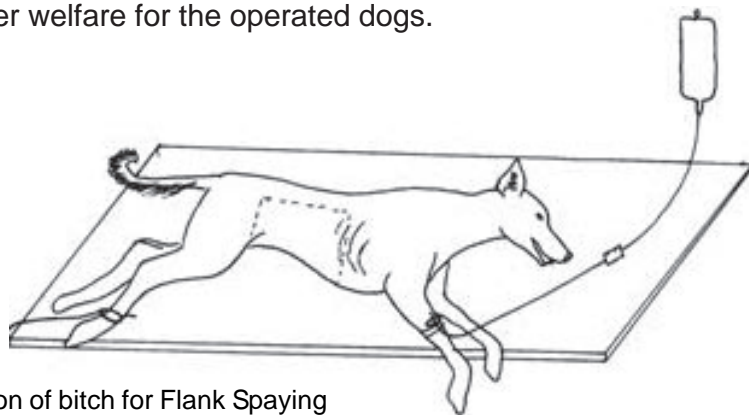


Fig 3: Position of bitch for Flank Spaying

To ensure asepsis, a fresh sterile surgical pack should be used for each animal. It is recommended that fenestrated drapes designed for sterilization surgery in bitches be of a different colour than those designed for use in castrations for easy identification and to prevent errors that can happen while preparing the surgical sets for autoclaving. It has been recommended to use green drapes for female surgical packs and blue drapes for male packs.

## 7.4 Surgical Procedure for Female dogs

### Ovariohysterectomy

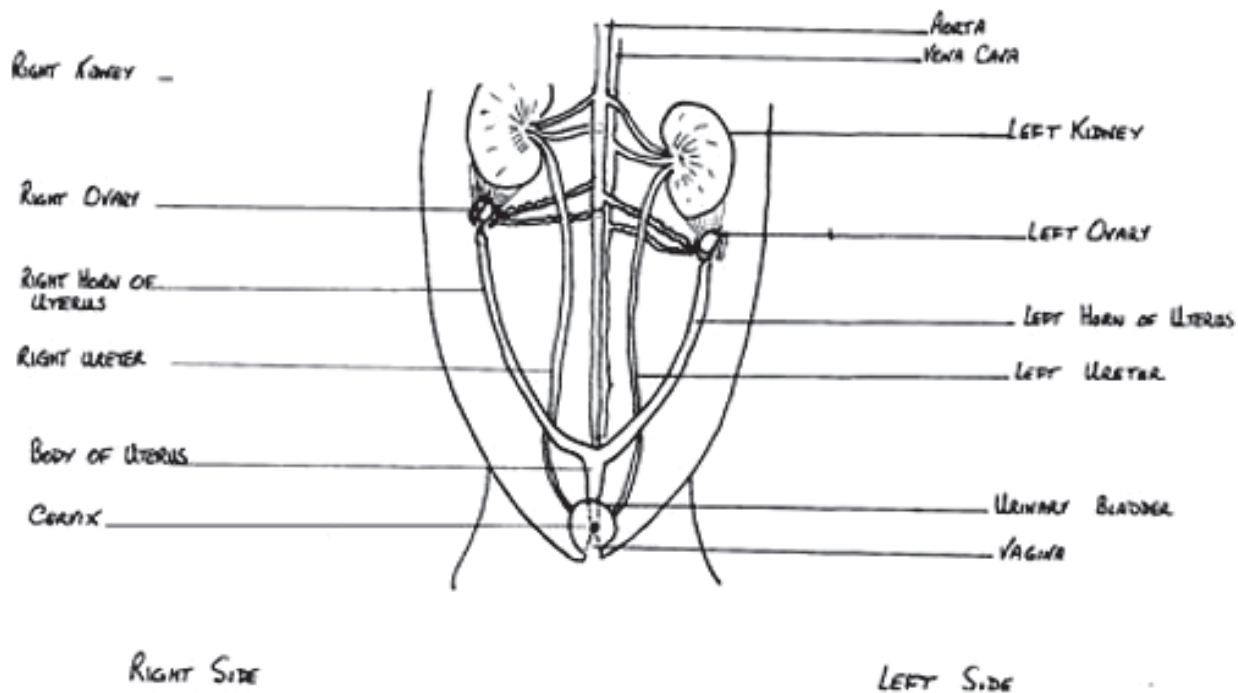


Fig 4: Diagrammatic Illustration of Female Surgical Anatomy of dogs as viewed from the ventral aspect

Complete ovariohysterectomy (both ovaries and uterus) by conventional (not laproscopic) surgery is recommended. The use of trained scrubbed-up surgical compounders (Para Vets) greatly assists the surgeon, saves time and aids in speedy recovery of the dogs besides helping to provide desired levels of asepsis. It is possible to sterilize dogs at any stage of the oestrous cycle. However, since oestrogen can delay blood clotting, it is vital to provide efficient haemostasis for female dogs that are operated, while in oestrus.

**Two surgical approaches are generally recognized and includes the right flank approach and midline approach:**

#### 7.4.1 Right Flank Approach (Not recommended for pregnant and pyometra cases)

The right flank method of surgery has been considered as the ideal and preferred method for spaying. The dog is positioned lying on its left side and the abdominal cavity is entered via the right flank with the ventral aspect of the dog directed towards the surgeon.

**Location of Incision Site for Flank Spay:** In adult bitches the incision is located as indicated in the diagram below:-

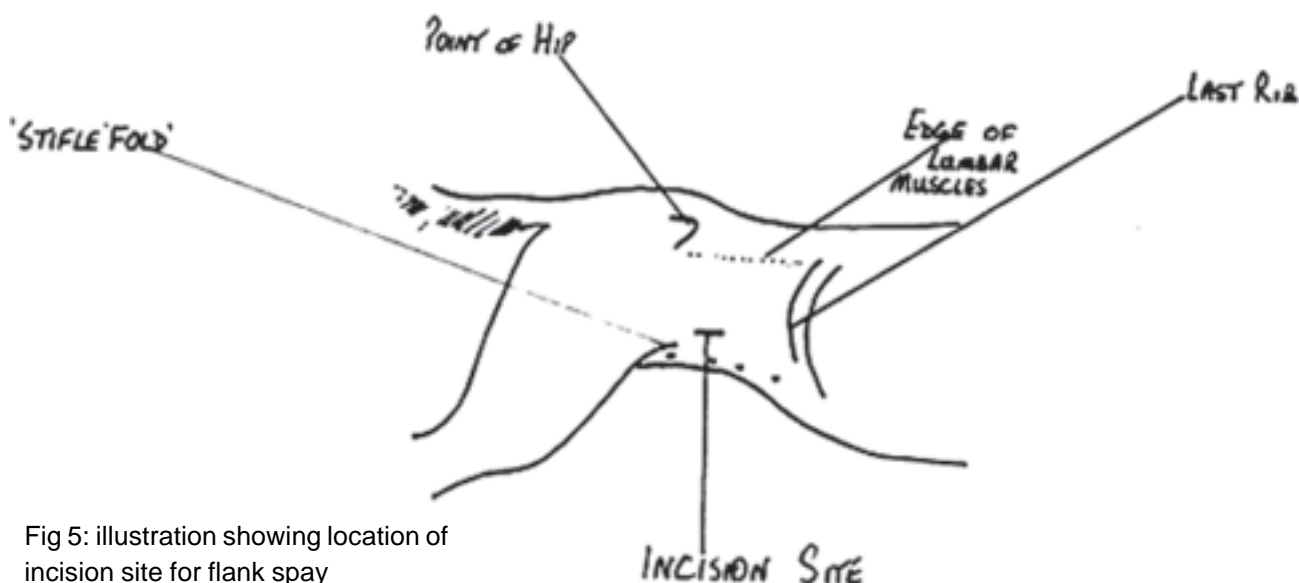


Fig 5: illustration showing location of incision site for flank spay

In adult bitches, the incision is made about 4 cms behind the most caudal curve of the last rib, parallel to the spine and about 9 cms ventral to the transverse processes of the lumbar vertebrae.

The incision often falls at the cranial end of the fold of skin connecting the stifle to the abdominal wall. In young bitches (under 6 months), the incision is placed more caudally. Failure to do this in young dogs results in difficulties in exteriorizing the uterine body near the bifurcation/cervix to allow identification and removal of the second uterine horn.

**Note:** The right ovary is more closely adhered to the right kidney and body wall than the left ovary and thus easier to exteriorize if incision is made in the right flank.

#### **Tissues incised -**

- Skin;
- Subcutaneous tissues/fascia;
- External abdominal oblique muscle;
- Internal abdominal oblique muscle;
- Transverse abdominal muscle to which the peritoneum is often attached.

The skin is cut with a scalpel. Subsequent layers are separated using scissors and blunt dissection. Incising the three muscle layers can cause haemorrhage. Splitting the muscles along their fibres reduces bleeding, causes less trauma and faster healing, but may result in a smaller aperture in which to work.

Inexperienced surgeons often find gaining entry to the abdominal cavity the most challenging part of this approach. Cutting these muscle layers is easiest if they are isolated using Allis tissue forceps by an assistant and if the surgeon's scissors are held perpendicular to the body wall.

## The Procedure

### Step 1: Locating the uterine horn and ovary

The right uterine horn is located with a spay hook. This is easiest done if the hook is inserted along the inside of the right abdominal wall and, brought in contact with the body wall and directed towards the right kidney / cranial lumbar region. If the hook is then rotated and removed carefully, the uterus can be easily brought within the hook.

The horn is elevated so that the ovary can be grasped between the thumb and index finger of one hand. The body wall is then depressed to reduce the distance so that the ovary can be removed. The suspensory ligament is stretched or broken with the second finger of that hand. When breaking the suspensory ligament, direct the tension caudally to protect and avoid tearing the ovarian vascular complex and subsequent haemorrhage. The ovarian vascular complex is located and a window is made in the mesovarium immediately adjacent to the vasculature. The ovarian vascular complex is then clamped with artery forceps.

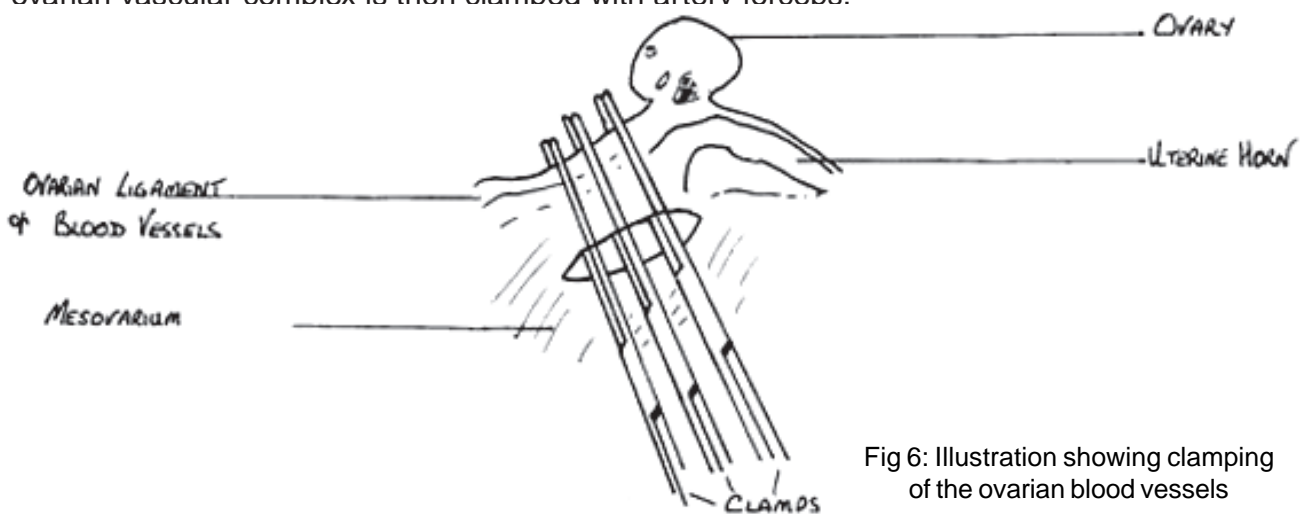


Fig 6: Illustration showing clamping of the ovarian blood vessels

### Step 2: Clamping the Ovarian Blood Vessels

The surgeon should keep hold of the ovary when applying the first clamp to ensure the clamp is placed below the ovary and thus that entire ovary is removed. Failure to remove all ovarian tissue may mean that the dog continues to show oestrous behaviour even if it cannot become pregnant. This is undesirable.

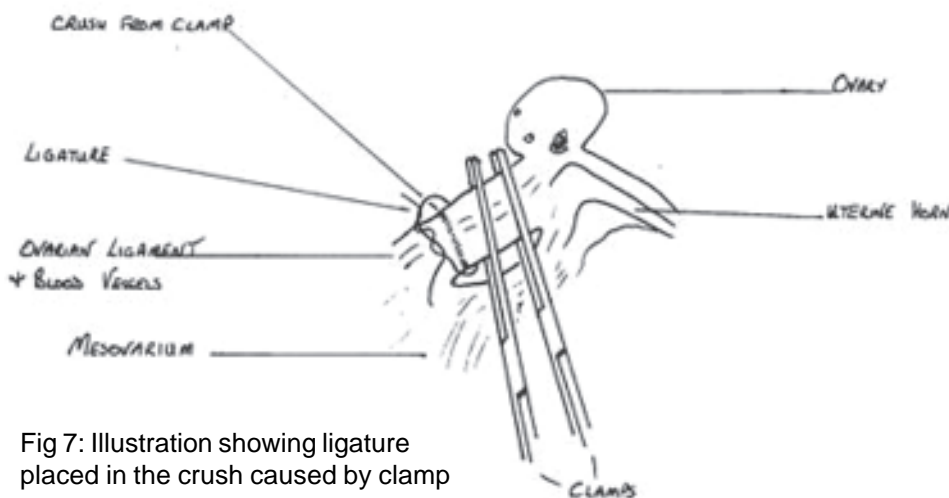


Fig 7: Illustration showing ligature placed in the crush caused by clamp

### Step 3: Placing Ligature into Crush caused by Clamp

A circumferential suture is placed loosely around the pedicle at the clamp furthest from the ovary. The clamp is removed as the suture is tightened so that the suture lies in the groove of the crushed tissue created by the clamp ensuring greater ligature security. A transfixing suture (i.e. one where the suture material passes through the tissues rather than just around them)

may be placed proximal to the ligature. This is prudent for inexperienced surgeons, and in bitches with large genitalia, in very fat bitches etc.

#### Step 4: Securely Tightened Ligature in place around the Ovarian Vessels

The ovarian stump is cut with scissors between the 2 clamps closest to the ovary. The excised ovary and ovarian bursa are examined to ensure that the entire ovary has been removed.

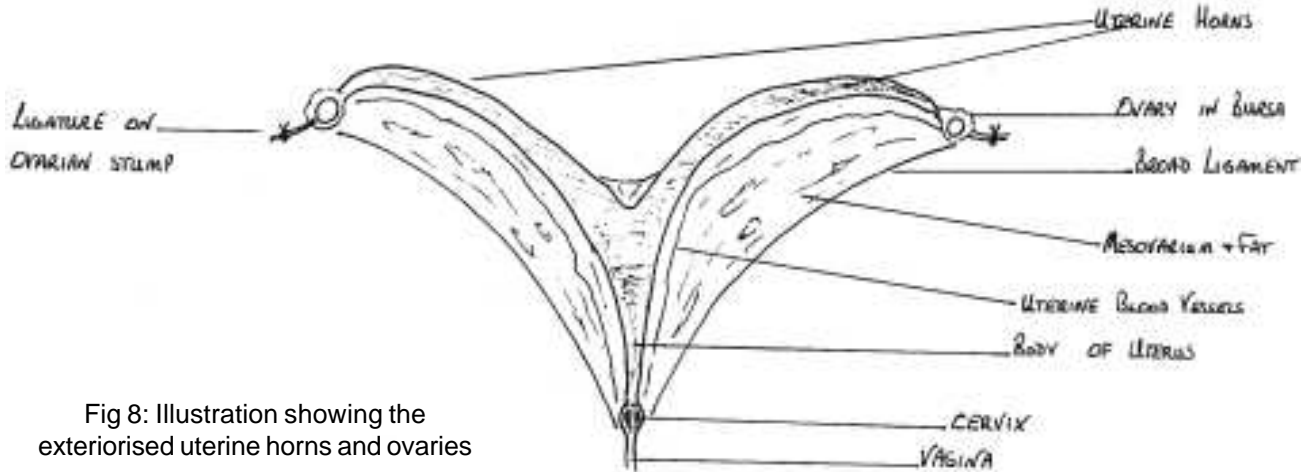


Fig 8: Illustration showing the exteriorised uterine horns and ovaries

#### Step 5: The Ovarian Vessels are cut from the Ovary

The stump is grasped (without grasping the ligature) with thumb (rat toothed) forceps. The clamp on the stump is released. The stump is inspected for bleeding. If no bleeding is noted, keeping the ligature / stump still attached to a mosquito forceps, lower into the abdominal cavity to remove the stretch on the ovarian artery/vein complex and reinspect for bleeding before final closure of abdomen. Care must be taken to ensure that a section of body wall has not been inadvertently incorporated in the ligature during tying.

The second (left) uterine horn is located by following the right horn distally to the bifurcation. Repeat procedure as for first ovary. Both horns of the uterus are exteriorized, along with the attached mesovarium and associated uterine blood vessels.

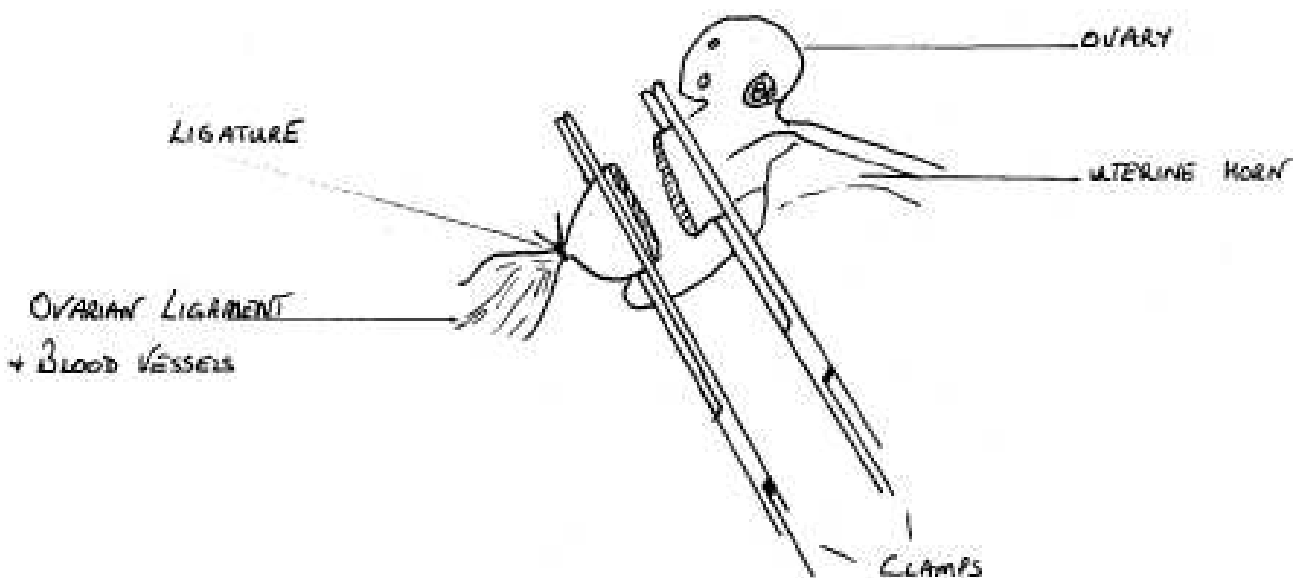


Fig 9: Illustration showing ovarian vessels being cut from the Ovary

## Step 6: Uterine Horns are exteriorized

A window is then made in the mesovarium adjacent to the uterine artery and vein, and much of the mesovarium, broad ligament and associated fat is broken from the uterus. This procedure is done with both uterine horns. The remnants of the mesovarium, broad ligament and associated fat are returned to the abdominal cavity. Following this, the uterus is seen separate from other tissues except from the vascular structures which run parallel to the uterus.

The uterine body is exteriorized. The cervix is located, though it often cannot be visualized. Various techniques may be used to ligate and remove the uterine body depending on the size of the uterus and the surgeon's preference. The triple clamp technique is generally used (as for ovarian attachments).

Care is required, particularly with bitches in season or which have recently whelped, as the uterine tissue may be friable and the clamps may cut rather than crush the tissue. In these cases, allowing a generous space between the clamps may reduce this risk. The three clamps are placed on the uterine side of the cervix. In smaller / non-pregnant dogs, it is possible to mass ligate uterine vasculature with just one ligature as, for the ovarian vascular pedicle.

### Special Conditions: Clamping of the Uterus and Blood Vessels just above the Cervix

In pregnant dogs, where the uterine vessels are of greater size, the uterine arteries and veins can be individually ligated between the cervix and the closest clamp. A circumferential suture is loosely placed around this clamp, the clamp is removed, and a suture tightened into the groove of crushed tissue. A transfixation suture can also be placed if desired. This will ensure greater

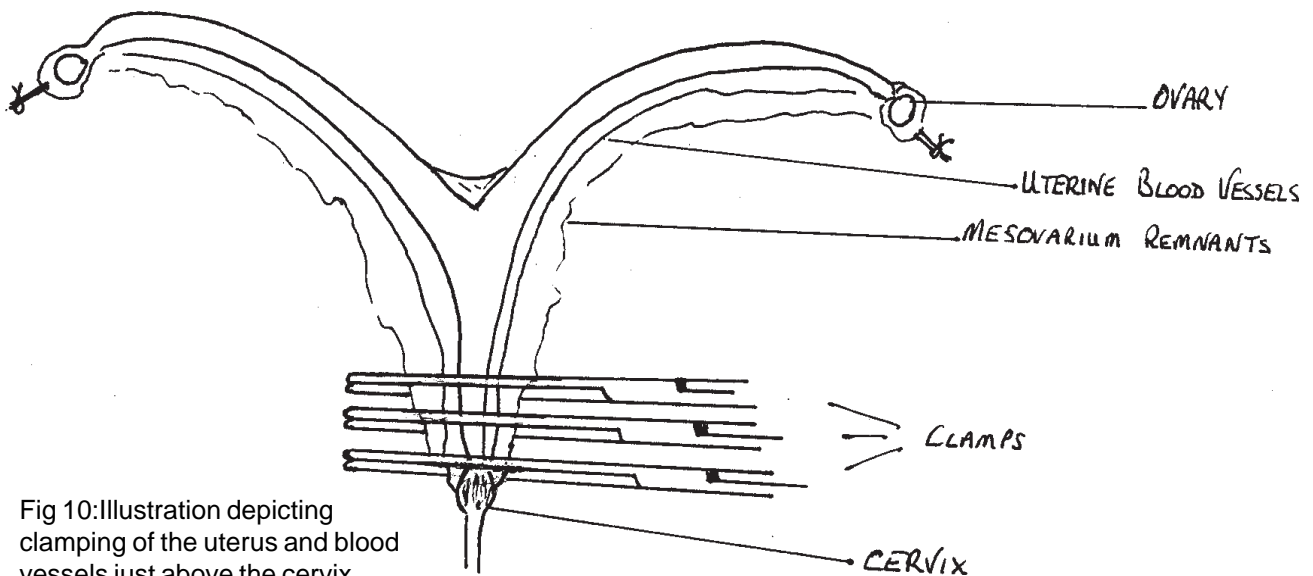


Fig 10: Illustration depicting clamping of the uterus and blood vessels just above the cervix

security of the ligature and is to be recommended. In pregnant or fat dogs, it is sometimes easier, and may result in a smaller surgical wound than, if the uterine body is ligated and removed (as described above) before the second ovary is removed.

The uterine body is severed between the remaining 2 clamps. The uterine stump is then evaluated for bleeding and returned to the abdomen. In cases where the uterine stump is very

large, or if there is evidence of intra-uterine infection, the stump may be oversown using catgut in a Lambert's or Cushing's suture pattern, and / or a piece of mesentery wrapped around it.

## Closure

On abdominal closure, each muscle layer is sutured individually i.e. 3 separate layers (the peritoneum is incorporated with the closure of the transverse abdominus muscle). In puppies, the peritoneum, transverse abdominus and internal abdominal oblique muscles are sutured with one suture and the external abdominal oblique is sutured separately with another suture.

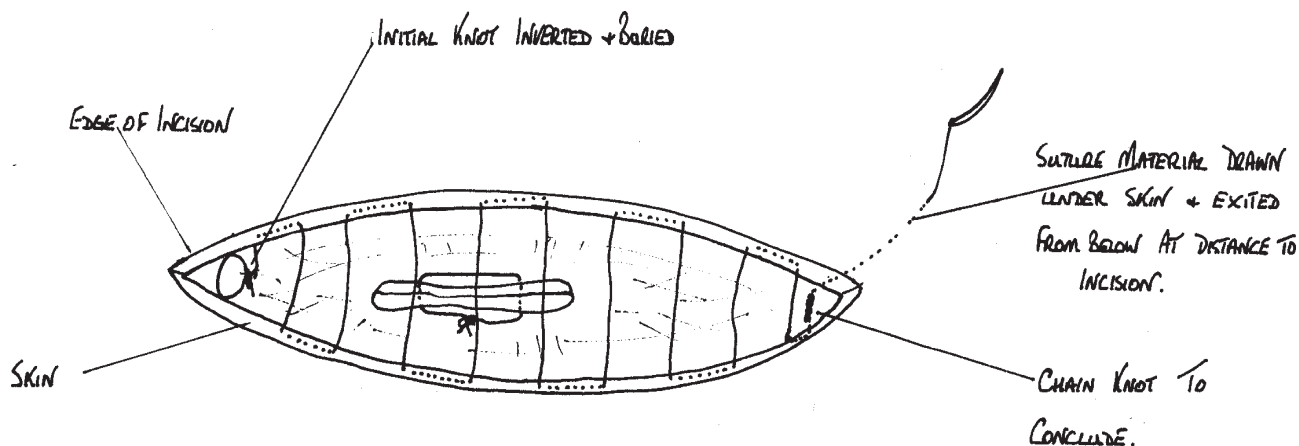


Fig 11: Illustration of intra-dermal suture

Vicryl makes a very good suture material for this site. For longer incisions i.e. more than 2 cms in length, a continuous suture pattern can be used, such as Ford interlocking.

For smaller incisions i.e. up to 2 cm in length, a horizontal mattress suture may be used. Horizontal mattress sutures appear to cause far fewer visible swellings, probably due to the reduction in the amount of catgut in the muscle layers.

When suturing the abdominal muscles, it is easier to work with an assistant who gently isolates the individual muscle layers. Allis tissue forceps may be placed on the very edge of the muscle layers but it is better to use Babcock forceps or rat tooth forceps as these are less traumatic to the tissues.

The subcutaneous tissues are closed and dead space eliminated using 3.0 Vicryl / either an interrupted, or continuous pattern. The skin is sutured with a simple interrupted or continuous intradermal suture pattern using Vicryl. The sutures are placed ensuring that all knots are buried.

## Advantages of Flank Approach

- The wound is under less tension than with midline incisions since the three separate muscle layers each individually sutured (catgut can safely be used in this site). Wounds are not under the weight of abdominal contents.
- Post operative checking and dressing can be carried out more easily in difficult animals.

- Should wound breakdown occur following release of the patient, life-threatening complication is unlikely unless a lengthy incision was made.
- Less tension in incision area and increased vascularity can reduce healing time.
- In young lean animals the spay can easily be performed through a very small incision.
- Animals can be released earlier than with midline.

### Disadvantages of Flank Approach

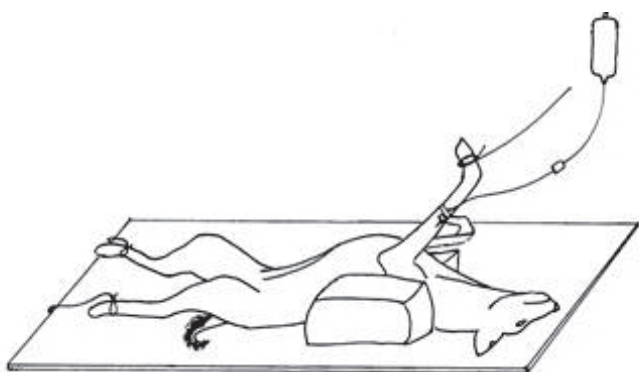
- Approach is more traumatic (i.e. through three muscle layers) rather than midline, and therefore increased post-operative pain is possible.
- Access to the left ovary or cervix may be more difficult, especially if the initial incision was incorrectly placed.
- Retrieval of a dropped ovary or bleeding ovarian stump or pedicle is difficult: if this occurs, the recommend procedure is to quickly suture the skin wound and prepare the dog for exploratory laparotomy via a ventral midline approach. Once the problem is addressed, the procedure is completed via the midline and then the flank incision is closed in layers as normal.
- Cutting through the 3 muscle layers can cause bleeding which may be sufficient to obscure the surgical field and can lead to increased risk of post-operative infection.
- Severe reactions to catgut can occur. Degradation sometimes produces swellings within the muscle layers and this needs to be monitored, as it is a favourable site for infection.

### 7.4.2 Midline Spay Technique

#### Approach

Tissues incised - skin; subcutaneous; linea alba – white, fibrous tissue plane (aponeurosis) and peritoneum.

If electing to perform surgery through a mid-line approach, it is important to ensure that it is the fibrous linea alba which is incised and not the adjacent muscles. Otherwise, the advantages of this midline approach are lost and the approach is then described as paramedian. The incision extends from about 1 inch caudal to the umbilical scar caudally, although some surgeons begin the incision at the caudal border of the umbilicus.



#### Spay

Routine spay is performed as described in the Flank Spay Technique.

Fig 12: Position of Bitch for Mid-Line Surgery



## Closure

Abdominal closure is done in one layer. A simple, interrupted suture pattern is used in the linea alba. Sterile, heavy gauge, monofilament nylon is used. Subcutaneous tissue and skin are closed routinely as before. Catgut cannot be used to close the linea alba since it degrades too quickly to support the slower healing fibrous tissues of this structure.

## Closure of the incision

The incision through the *linea alba* is closed incorporating the external rectus fascia. Catgut is not recommended in this site as its rate of degradation may be faster than the rate of healing leading to an increased risk of herniation. Most surgeons go for non-absorbable (vicryl) suture material in the midline. This option requires greater maintenance of asepsis. The fascia is closed and the skin incision is sutured according to the preferences of the veterinary surgeon and depending on the suture material available. Nylon sutures are recommended for skin closure.

## Advantages

- The avascular nature of the linea alba may mean less haemorrhage
- There may be less post operative pain associated with incisions at this site.
- The incision can be easily extended should some complication like a hemorrhage or dropped pedicle occur during the operation
- Many surgeons are more familiar with this approach as it is used as the standard approach to the abdomen for a range of procedures.
- Minimal / no reaction to monofilament nylon suture used in the abdominal wall.

## Disadvantages

- The linea alba, through which the midline incision should be made, may be difficult to identify. Failure to locate the linea alba and making an incision para-medially effectively removes all the advantages of this approach.
- The wound is more inaccessible and thus harder to check in fearful animals.
- Dogs must be kept longer to allow adequate healing, as the healing rate of the fibrous linea alba is slower than muscle because of its more limited blood supply.
- The avascular linea alba incision heals slower than muscle. Therefore, dogs must be retained in kennels for a longer time.
- The incision is under the full weight of the abdominal organs and thus there is an increased risk of wound breakdown and herniation
- The site is more difficult to check in bad-tempered or fearful animals.

### **7.4.3 Clinical Complications that may be seen following ovario-hysterectomy surgery**

#### **1. Haemorrhage**

During the operation serious haemorrhage can arise from a number of places. It may occur by tearing of ovarian vascular complex whilst stretching / breaking suspensory ligament. This can be avoided by stretching rather than breaking the suspensory ligament and doing so in a caudal direction. Haemorrhage can result from tearing of uterine vessels by excessive tension on uterine body. This is particularly so when operating on pregnant bitches during exteriorisation of the uterus. Handling all tissues gently will reduce the risk of this, as will ensuring that the incision is of appropriate size for the uterus being removed.

Bleeding may happen when tearing other large vessels in broad ligament while stripping this off the uterine body prior to the clamping and ligation of the cervix. This danger can be avoided by individually ligating any large vessels (if present, e.g. fat dogs) in the broad ligament and mesovarium. Controlled separation of the broad ligament from the uterus working from the cervix to the ovary also reduces the risk of haemorrhage from this source. Ensuring all sutures are adequately placed and tied using proper surgeon's knots will help reduce the chance of intra-operative and post-operative haemorrhage.

Haemorrhage from muscles can be a problem, but will not normally be life threatening. With careful incision and dissection of each muscle layer, it is often possible to see and thus avoid major body wall blood vessels. Clamping vessels with haemostats will usually stop the bleeding with time. Bitches in oestrus at the time of spaying may bleed more than expected due to the effects of oestrogen on the clotting cascade.

#### **2 Recurrent signs of oestrus / heat**

Signs of oestrus result from functional remnants of ovarian tissue being left in the abdomen following an incomplete spay operation. The animal will still show signs of season. The surgeon must ensure all ovarian tissue is removed, by, for example, holding the ovary while clamps are applied, and by inspecting the excised tissue to check if it contains the whole ovary.

#### **3. Uterine stump pyometra**

Uterine stump pyometra may occur if any portion of the uterus is not removed during the spay. Due to the risk of the last two complications mentioned above, it is recommended that complete ovariohysterectomy be performed rather than tubectomy or ovariectomy.

### **7.5 Surgical Procedure for Male Dogs**

#### **Castration**

Males are positioned in dorso-lateral recumbancy facing to the surgeon's right. The right hind leg is secured so that the pelvic region is exposed and the right stifle is not overlying the surgical site. The dog can be placed in dorsal recumbancy but this requires support at the thorax / axillae and also the straightening of the catheterized foreleg to ensure that the catheterized vein is not occluded at the flexed elbow. These positionings and adjustments take extra time. The scrotal, penile, inguinal and perineal regions are shaved and prepared for surgery as described earlier.

## Site of Incision for Castration

Males are castrated through a single pre-scrotal incision. One testicle, usually the lower testicle, is advanced cranially and the skin incision made over the tensed testicle. The subcutaneous tissues, and the tunica dartos and external spermatic fascia are incised. The testicle

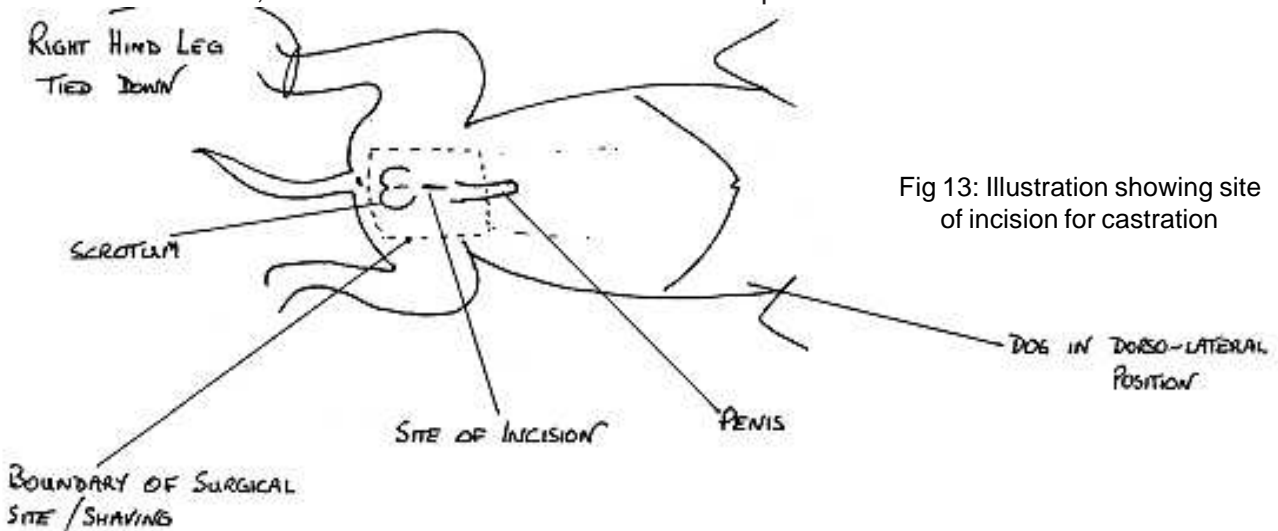


Fig 13: Illustration showing site of incision for castration

within the spermatic sac is then grasped and pulled free. The spermatic sac is then excised at its most ventral part. The vaginal tunic is reflected revealing the testicle and associated structures.

The vaginal tunic is separated from the tail of the epididymis by breaking the ligamentous attachment there. This leaves the testicle connected by only the spermatic vessels in one bundle and the deferent duct connected by the mesorchium.

## Retraction of the Vaginal Tunic

The exact method of removal of the testicle varies between surgeons and also depends on the size of the testicle and its associated structures. The deferent duct and the spermatic vessels may be clamped and ligated as described for the ovarian attachments (using the 'triple clamp' method). This is the

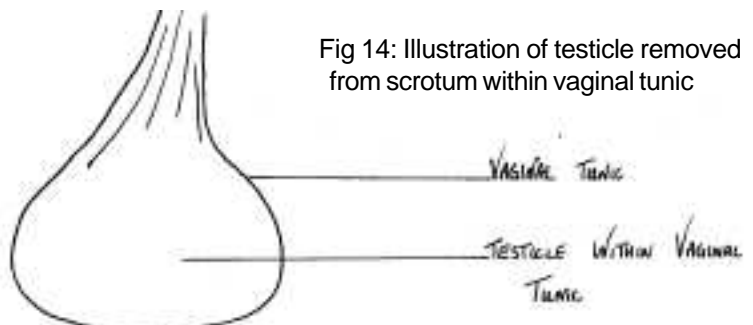


Fig 14: Illustration of testicle removed from scrotum within vaginal tunic

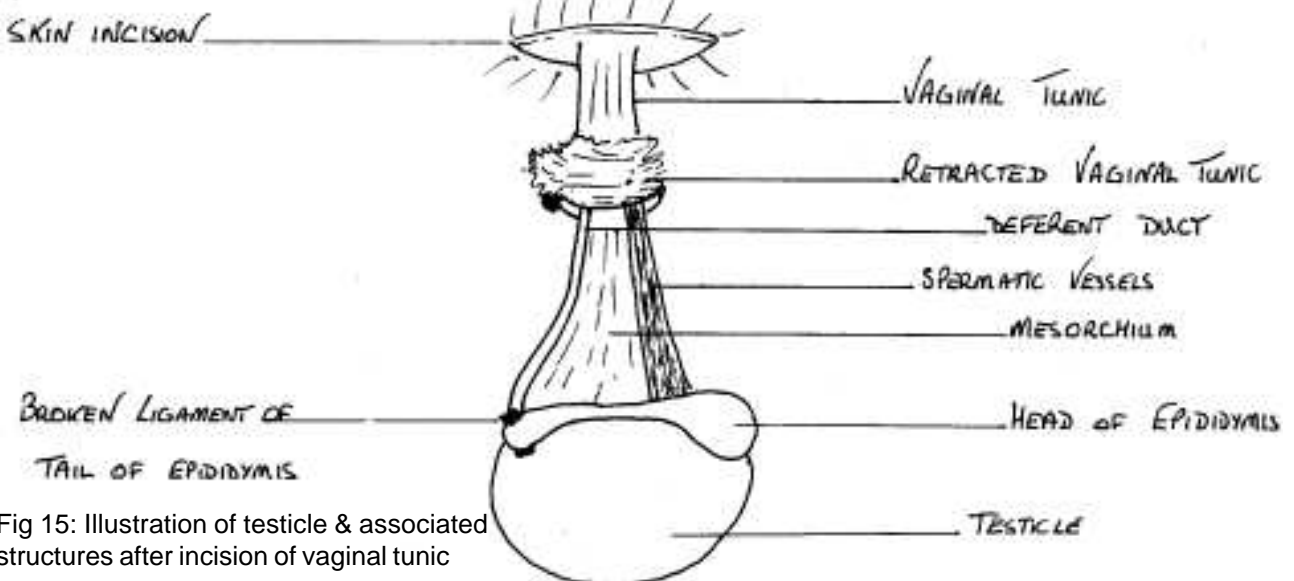


Fig 15: Illustration of testicle & associated structures after incision of vaginal tunic

method of choice for large, well-developed testicles. For smaller testicular structures it is possible to tie the blood vessels and the duct to each other to ensure that haemostasis is maintained once the deferent duct has been broken from the epididymis.

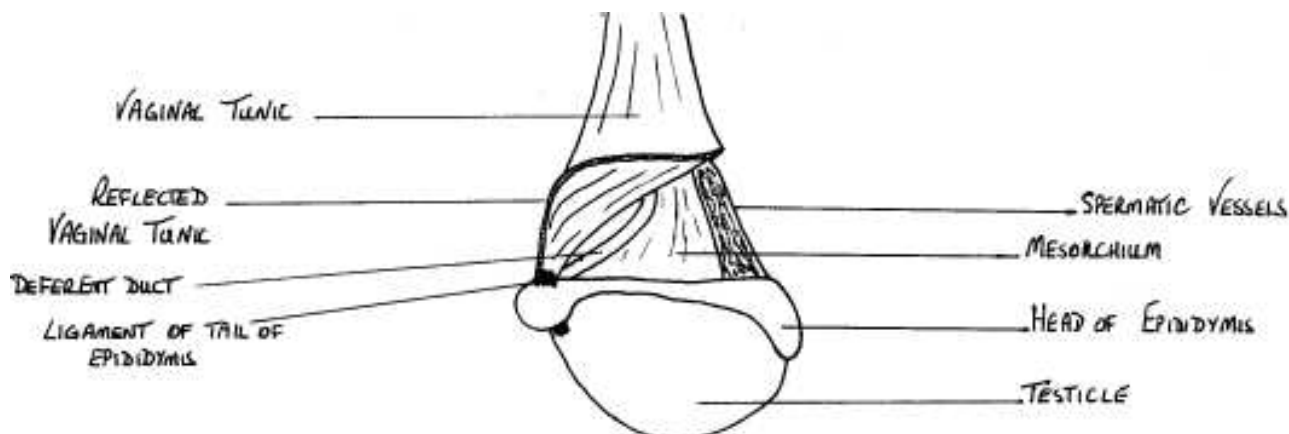


Fig 16: Testicle and associated tissues after incision of vaginal tunic

**Note: Once the vessels are ligated, the testicle can be severed from them. The spermatic vessels usually retract considerably once this has been done.**

The contralateral testicle is now advanced into the skin incision and an incision made in the tissues surrounding the testicle as before to allow the testicle within the spermatic sac to be grasped and exteriorized. This testicle is then isolated and excised as before.

Suturing involves closing all dead spaces with a continuous 3-0 catgut suture. It is considered a good practice to place this suture through the vaginal tunics of the two testicles to ensure that the potential opening into the abdominal cavity is closed and also to incorporate the septal midline tissues. The skin is closed with an intra-dermal suture as described for skin closure in the spay procedure for bitches.

Particular attention must be paid to ensure that haemostasis is maintained, in order to reduce the incidence of post-operative haematoma and possible ischaemia of the scrotum. Should this occur, scrotal ablation may be required. Considerable post-operative bruising and swelling are common especially in larger dogs. This may be further exacerbated by the dog licking at the area.

#### **Potential Complications:**

The risk of haemorrhage from spermatic vessels is much less likely if this double ligation technique is employed. However, if noted, an attempt should be made to locate the ends of the cord on the side from which the haemorrhage is occurring, by grasping the deep tissue with haemostats and applying gentle traction. Should this prove unsuccessful, the skin incision should be extended into the scrotal sac as this will improve access to the inguinal canal, enabling location of the bleeding stump and application of two secure ligatures. If the skin incision is extended in this manner, scrotal ablation is necessary to excise the sac and associated dead space, which would otherwise predispose to scrotal haematoma.

#### **7.6 Cleaning of used kits and drapes**

- As soon as possible after the completion of a procedure, both the surgical instruments and drapes should be thoroughly washed and rinsed, ensuring removal of all blood and discharges. A toothbrush is useful to clean instruments thoroughly, with particular attention to the jaws,

box joints and ratchets. Alternatively, an ultrasonic cleaner may be used to clean the instruments. After cleaning, the instruments should be rinsed in clean, hot water. This will help to flush away any organic matter still adhering to the instruments.

- Drapes should then be hung to dry. Once dry, the drapes should be checked for hair and any other debris present. If any hair is present on the drapes, the hair should be brushed out and the drape should be washed thoroughly once more and left to dry.
- Cleaned instruments should be placed on a towel to dry; instruments with ratchets should be left open.
- Periodically, the instruments should be left to soak overnight in protective instrument milk (which would be available from the supplier). A disadvantage of using instrument milk is that it will result in corrosion in the metal whenever there is a defect in the protective metal oxides that cover the instrument. Hand lubrication of each joint of each instrument, with special oil, is the better option, but it is more labour intensive.

### **7.7 Safe disposal of surgical waste**

After surgery, the gloves, empty vials, syringes and needles should be carefully disposed off by transferring them to waste bags and incinerating them. It is essential that all Animal Welfare Organizations doing an ABC Programme have an incinerator or have access to an incinerator where the surgical waste materials can be safely disposed off. Alternatively, surgical works can be disposed through an agency identified by local Municipal Corporation for Hospital waste.



## **Section 8**

### **POST-SURGICAL CARE, ANTI-RABIES VACCINATIONS & RELEASE OF DOGS**

- 8.1 Post-surgical care: General considerations
- 8.2 Use of Analgesics
- 8.3 Use of Antibiotics
- 8.4 Anti-rabies vaccines: General considerations
- 8.5 Guidelines for release of the sterilized & vaccinated dogs
- 8.6 Education of public

## SECTION 8

# POST SURGICAL CARE, ANTI-RABIES VACCINATIONS & RELEASE OF DOGS

### Post-Surgical Care

#### 8.1 General considerations

- The choice of antibiotics and analgesics to be used after the surgery is a decision that is to be made on a case by case by the veterinary surgeon. The decision about the antibiotic / analgesic to be used would be influenced by the veterinary surgeon's clinical experience, conditions prevailing at the kennel and the health of the dogs. Care should be taken to ensure that the antibiotics used are broad-spectrum.
- Dogs recovering from anaesthesia and surgery need to be kept warm and dry. Once the dogs have recovered sufficiently from anaesthesia and surgery, the dogs should be provided access to drinking water.
- The dogs should be checked at least once daily by a veterinary surgeon and based on the clinical condition of the dogs; a decision should be made for additional medications to be given. Suitably sized 'buckets' or 'Elizabethan collars' can be used where dogs are irritated and causing self trauma to wound sites- in addition to the anti-inflammatories and antibiotics needed.



- The system of having the operating veterinary surgeon check surgical patients throughout the dog's stay in kennels has much to commend it. However, if the veterinary surgeon who is attending to the post-operative care is different from the veterinary surgeon undertaking the surgeries, a standard system of recording and reporting must be developed. This needs to be done to ensure that the veterinary surgeon who has done the surgery receives correct feedback about the progress of his / her patients so that improvements in technique can be identified and implemented if necessary.
- During daily checks, the dogs which are ready to be released must be identified, and the necessary steps should be taken to release the dogs.

#### 8.2 Use of analgesics and antibiotics:

The Standard Protocol to be followed is mentioned as below:

- **Administration of analgesics**—Analgesic agents are required for all patients undergoing neutering. Acceptable choices include opioids (e.g. butorphanol, buprenorphine, morphine, hydromorphone, and pentazocine), alpha2-adrenoceptor agonists (e.g. medetomidine, dexmedetomidine, and xylazine), NSAIDs (eg, carprofen, meloxicam, tepoxalin, deracoxib, firocoxib, aspirin, flunixin, ketoprofen, and etodolac), and local anesthetics (eg, lidocaine and

bupivacaine). **Note: All sterilization surgery for stray dogs must be done only under General Anesthesia.**



- Combining multiple analgesic agents in a single protocol is known as multimodal analgesia and greatly improves pain and stress control in animals undergoing neutering through a spay-neuter program. Use of reversible agents and pre-emptive administration of analgesics prior to the initial surgical incision are common methods for providing safe and effective analgesia in high-volume settings.
- Surgical technique also influences the severity of postoperative pain. Anxiolytic agents for stress reduction include minor and major tranquilizers (eg, acepromazine, midazolam, and diazepam) and  $\alpha_2$ -adrenoceptor agonists. These can be delivered in combination with other analgesics.
- Administering Intramuscular injection of meloxicam is recommended as an analgesic immediately after the surgery and also during the post-operative care.

### 8.3 Antibiotics

**It is recommended that the following antibiotics be used**

- Amoxicillin-cloxacillin: 20 mg / kg body weight twice daily for 3-5 days
- Amoxicillin-sulbactam: 10 mg / kg body weight
- Benzathine penicillin once in three days
- Ceftriaxone once a day @ 22mg / kg bw I/M for 3-5 days

The surgical wound and ear notch wound must be cleaned and dressed regularly till the sutures are removed 7 days after surgery in bitches.

### 8.4 Anti- Rabies Vaccinations: General Considerations

- The anti-rabies vaccine should be administered on the day of release while deworming medications should be administered on the first day when dogs are caught.
- It is essential that all dogs passing through an ABC programme receive vaccination against rabies.
- A variety of reputable vaccines are available for dogs e.g. Raksharab, Nobivac Rabies (Intervet) and Defensor (Pfizer). It is essential that such vaccines are kept in a refrigerator.
- The cold chain of vaccine manufacturers and suppliers should be investigated prior to use of the vaccine.
- Some evidence exists to indicate that intra-muscular injection of vaccine produces longer lasting protection. Therefore, it is recommended that the vaccine be given by the intra-muscular route.



- Concern has been expressed over the effects of stress on vaccine efficacy when vaccination is done at the time of surgery shortly after capture. It is thus advisable to administer the vaccine as long after surgery as possible, immediately before release of the animal.



### 8.5 Guidelines for release of the sterilized and vaccinated dogs

- Only dogs identified by a veterinary surgeon as fit for release should be released.
- It is imperative that dogs are released back to the exact location from where they were picked up. Care should be taken to ensure correct identification of dogs and addresses.
- Releasing dogs on main roads should be avoided if possible since the dogs may be temporarily bewildered at the time of release
- Where possible, dogs should be released into the care of their caretakers if such persons are present
- Although dogs should be released after ensuring that they have been fed, they should not be fed immediately prior to their transport to the release sites as this practice may cause dogs that can experience travel sickness to vomit.



- If release of the dogs is to be done by staff from the municipality, a representative of the ABC programme should accompany the releasing teams to ensure the accuracy of releases.
- In many areas, the release of dogs during the early morning time may be easiest, both for the releasing team as well as the dogs.

- In the event of severely inclement weather, the release of the dogs should be postponed till more favourable weather prevails.

### 8.6 Education of Public

- Members of the public that are witnessing the release of stray dogs that have been sterilized and vaccinated under the ABC Programme should be educated about the programme. The onlookers must also be informed that the excess salivation seen in the released dogs is only due to transportation.
- Members of the public and caretakers should be encouraged to contact the ABC programme if they see any released dog which appears sick or in need of further veterinary care.



## Section 9

### **EUTHANASIA, POST- MORTEM EXAMS & VERIFICATION OF ABC SURGERIES**

- **9.1 Euthanasia**
- **9.2 Post-Mortem examinations**
- **9.3 Verification of ABC surgeries**

# SECTION 9

## EUTHANASIA, POST-MORTEM EXAMS & VERIFICATION OF ABC SURGERIES

### 9.1 Euthanasia

- Euthanasia should be carried out of incurably sick, mortally wounded or rabid dogs as per the ABC Rules. Besides, euthanasia may also be carried out on dogs suffering from a severe or life threatening injury or illness that has no cure, dogs severely injured in an accident and dogs found to be extremely aggressive and bad tempered, prone to biting people and with a history of having bitten people.
- Most dogs selected for euthanasia will be identified at the Pre-Surgical check stage. Some, however may not be identified until surgery is underway.
- Experience has shown that the highest euthanasia rates are seen at the beginning of an ABC programme in an area. To avoid unnecessary euthanasia, prior intensive training of the veterinary and Para veterinary staff is mandatory.
- Euthanasia, and its suitable methods, is the subject of further guidance from the AWBI.

#### 9.1.1 The method utilized for euthanasia must serve the following criteria:

- Be painless
- Achieve rapid unconsciousness followed by death
- Minimise animal fear and distress
- Be reliable and irreversible

#### 9.1.2

Euthanasia should be carried out using Intravenous (IV) injection of 20% solution of Thiopentone sodium (90 mg/kg bw I/V) after sedation with Xylazine. Alternatively 10% Potassium Chloride can be used as a euthanizing agent after Xylazine Sedation.

#### 9.1.3

##### Confirmation of death

All operators performing euthanasia should be able to identify when death has occurred.

Indicators include:

- **No movement of the chest / No signs of respiration**

The animal's chest has stopped moving up and down indicating that it has stopped breathing. Do not rely on this sign alone as the animal's heart may continue to beat for some time after it has stopped breathing

- **No heart beat**

Check for this with a stethoscope or by palpating the animal's chest wall.

- **No pulse**

Check for this by palpation over the medial aspect of the animal's hind limb. Not always easy to locate in small animals

- **Loss of colour from the mucous membranes in the animal's mouth**

Mucous membranes become pale and there is no capillary refill if pressure is applied. With time, the mucous membrane becomes dry and sticky. Capillary refill is frequently still evident for prolonged periods after an animal has died

- **Corneal reflex (blink reflex) is lost**

The corneal reflex is normally elicited when the eyeball is touched. After death, the animal's eyes remain open and the lids do not move when touched.

- **Glazing of the eyes**

This occurs rapidly after death. The cornea loses its clear, moist appearance and becomes opaque, dry and wrinkled.

- **Rigor mortis**

If death cannot be confirmed by a veterinary surgeon, or there is any doubt, operators should wait until rigor mortis has set in before disposing of the animal's carcass.

#### 9.1.4

##### **Disposal of rabies carcasses**

Special precautions should be taken when handling the carcass of any animal suspected of carrying rabies, including the use of protective clothing: gloves, overalls, eye goggles and protective shoes. The carcass should be sealed in a plastic bag, as the rabies virus can remain active for some time after death. The external surfaces of the carcass can remain infective for several hours after death, and the internal organs can remain infective for several weeks depending upon environmental temperature, so burial is not recommended. The carcass of a dog suspected to be rabid should be sent to the nearest veterinary pathology laboratory for confirmation. Carcass disposal of Rabies cases through an incinerator is recommended.

## **9.2 Post-Mortem Examinations**

- All animals that die in ABC kennels should be subjected to post-mortem examination to ascertain the cause of death. Ideally, the post-mortem must be carried out at the nearest veterinary pathological laboratory. If the post-mortem is to be carried out on the premises of the AWO, it should be done by a qualified veterinary pathologist.
- Such cases are an opportunity to learn and to implement improvements in the ABC programme, its techniques and practices

- In particular, animals which die post operatively should be examined to determine whether the surgical intervention or anaesthesia was responsible for the death.
- Causes of death should be recorded in the records referred to above.

### **9.3. Verification of ABC Surgeries**

- Records and registers as detailed earlier (appendix 1) should be maintained.
- The removed organs should be preserved in vinegar
- The organs should be kept month wise in separate jars, with male and female organs kept separately.
- Records for anomalies to be maintained. Details of cryptorchid males, gravid uterii, and already operated females should be maintained to tally the recorded data with physical count.
- Data, verified by Joint inspection of Co-opted Member / Member of the Animal Welfare Board of India and Municipal authorities are to be submitted to the AWBI as instructed.
- After verification by the inspection team, effective disposal of organs through incineration should be carried out.

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**Surgical Instruments:** consists of a photo gallery and relevant details about the instruments used in veterinary surgery.

**Preparing the equipment for surgery:** introduces the methods of equipment sterilization .

**Preparing the patient for surgery:** describes preparation of the operative site for both large and small animals. Videos and photo series illustrate surgical scrubbing and draping procedures.

**Preparing the surgeon for surgery:** demonstrates preparation of the surgeon for surgery . Videos and photo series illustrate surgeon's scrub, gowning and gloving. Information about various antiseptics is included.

**Sutures and suture handling:** includes instructional videos and animation to help veterinary students learn suture patterns and knot tying.

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# Annexure 1: Preoperative Assessment

## Scoring

1. Male/ female /already operated: If already operated, the dog should be released at original location (after any treatment. if necessary).
2. Temperature, weight
3. Age determination by checking the dentition
  - a) Below five years : 2
  - b) Above 10 years ( all incisors worn out up to gum level ) : 1
4. Mucous membrane
  - a) Pink : 2
  - b) Pale / discoloured : 1
5. Capillary refill time
  - a) < 2 seconds : 2
  - b) > 2 seconds : 1
6. Pulse
  - a) > 80 beats per minute : 2
  - b) < 80 beats per minute: 1
7. Checking of all superficial lymph nodes (submandibular, prescapular, popliteal)
  - a) Even sized and small : 2
  - a) Enlarged / variation in size of the contra lateral node : 1
8. Cough reflex
  - a) Negative : 2
  - b) Positive : 1
9. Auscultation of respiratory system
  - a) Clear : 2
  - b) Congested : 1
10. Skin tenting time
  - a) < 2 seconds : 2
  - b) > 2 seconds : 1
11. Abdominal palpation
  - a) Negative for masses, gross enlargement of spleen, liver, uterus, kidneys : 2
  - b) Positive for masses, gross enlargement of spleen, liver, uterus, kidneys : 1

12. Discharges from all natural orifices nose (respiratory tract infection, eyes, anus (diarrhoea), and vagina – pyometra?)
  - a) Nil : 2
  - b) Present : 1
  
13. Other conditions- fracture wounds/ skin disease
  - a) No major conditions : 2
  - b) Major condition : 1

**Dogs getting 18 points or less surgery must be reconsidered / delayed / avoided and reassessed after treatment at shelter.**

## **Annexure 2: Essential Medications for An Emergency Kit**

An Emergency Kit, together with dosage charts, should be stored in a secure location but be readily available within the surgical facility. The kit should be checked and re-stocked quarterly; the date of the checks should be recorded in writing. The responsibility for doing this should be assigned to a named and identified person (or persons) – in most instances a veterinarian.

The Emergency Kit (drugs and equipment) should be administered in emergency cases in accordance with recommendations made in standard medical textbooks routinely used in veterinary teaching universities and colleges throughout the world.

**The Emergency Kit must contain the following:**

### **0.9% Saline, Lactated Ringers solution or Hartmanns solution**

**Dose range:** 60-90 ml/kg/hour

The fluids should be administered via a single or dual line as a continuous intravenous infusion via a securely placed sterile intravenous catheter. Dermal cut down following injection of 1-5ml of lidocaine 2% may be needed over the venipuncture site.

**Adrenaline (adrenergic agonist):** 1:1000 solution.

A high dose given intravenously may be required in the case of cardiac arrest. Adrenaline should not be given intra-cardiac unless the heart is visualised.

**Dose ranges:** 0.01-0.02 mg/kg (low dose) to 0.1-0.2 mg/kg (high dose) given intravenously

Up to 0.6 mg/kg if given intra-tracheally

**Terbutaline (B-adrenergic agonist and bronchodilator):** 0.5mg/ml solution

**Dose ranges:** 0.01 mg/kg subcutaneously, intramuscularly or intravenously every 4 to 8 hours and up to 0.03-0.05 mg/kg subcutaneously

Terbutaline can subsequently be given orally.

**Diphenhydramine (antihistamine)**

**Dose ranges:** 0.5–1 mg/kg intramuscularly or intravenously.

Subsequent doses may be administered at 25-50 mg/dog intramuscularly, intravenously or orally every 8h.

Other possible doses: 1-2 mg/kg intramuscularly or intravenously

**Doxapram (respiratory stimulant):** 20mg/ml solution

Dose following intravenous anaesthesia 2-5 mg/kg and following inhalation anaesthesia 1-2 mg/kg. Maximum dose is 10 mg/kg given intravenously slowly.

Neonate: can be given subcutaneously, via umbilical vein or sublingually at 1-5 mg/neonate puppy

**Furosemide (diuretic)**

Dose: 1-6 mg/kg subcutaneously, intramuscularly, intravenously, or per os every 1-2 hours or every 6-12 hours (depending on condition and desired effect).

**Dexamethasone sodium phosphate (glucocorticosteroid) - Dose:** 2mg/ml solution

Give up to 1-15 mg/kg intravenously for shock, at 0.5mg/kg intravenously or intramuscularly for anaphylaxis and at 0.2-2.2 mg/kg for anti-inflammatory effect. It can be given intravenously, intramuscularly or subcutaneously every 4 to 6 hours; depot injection must not be given intravenously.

### **Methylpredisolone sodium succinate**

For the treatment of shock, methylpredisolone sodium succinate is preferred. Give 30 mg/kg intravenously slowly over 5 to 10 minutes. Repeat injection of 15 mg/kg intravenously at 2 and 6 hours after initial dose. Appendix for Solumedrone-V Datasheet.

### **Glucose or dextrose.**

Dextrose solution 5%: best added to fluid solutions. Should not be given for shock. Dose: 40-50 ml/kg every 24 hours intravenously

Can give a slow 1-5ml intravenous bolus of a 50% dextrose-containing solution. Ideally, repeat doses should be guided by serial blood glucose measurements.

### **Sodium bicarbonate 8.4% solution (1 mEq/ml, same as 1 mmol/ml))**

Acidosis: 0.25 – 1 mmol/kg slowly intravenously over 30 minutes (same as 0.25-1 mEq/kg)

Cardiac arrest: 1 mmol/kg slowly intravenously over 1-2 minutes, then 0.5 mmol/kg at 10 minute intervals during arrest.

**Caution:** Do not use with Lactated Ringers solution. The administration of an alkalinising agent may not be efficacious for short-duration cardiac arrests but may improve survival in long-duration cardiac arrests.

Recommendation: give no sodium bicarbonate for the first 5 to 10 minutes and then 0.5 mEq/kg per 5 minutes of cardiac arrest thereafter. If it is known or suspected that metabolic acidosis predated the cardiac arrest, then the bicarbonate dosing should start right away.

### **Diazepam**

Dose ranges: for control of seizures: 0.5-3 mg/kg as intravenous bolus. Wait for 5 minutes, if seizures persist, repeat the bolus.

Diazepam can be given rectally if intravenous access is not possible, at 0.5-1 mg/kg

### **Atropine**

For the treatment of bradycardia, but with care when used after medetomidine.

Dose ranges: 0.02-0.04 mg/kg intravenously, intramuscularly or subcutaneously every 6 to 8 hours

Laryngoscope and endotracheal tubes of the correct diameter for all patients.

Glucometer and refractometer (for urine specific gravity, total proteins/solids etc)

**(The composition and dosages of medicines for this emergency kit are as recommended by IFAW)**

## Annexure 3: Emergency Kit Quick Reference Chart

Drug	Function	mg/kg	ml/kg	Route	Cat	Dog
0.9% saline Lactated Ringers Hartmanns	Fluid therapy – shock, rapid rehydration.		60-90 /hr (dog) 40-60 /hr (cat)	iv	X	X
Adrenaline (Epinephrine) 1:1000 = 1mg/ml	Adrenergic agonist - cardiopulmonary arrest, anaphylactic shock	0.02-0.2 (0.6 intra tracheal)	0.1-1ml/5kg  (dilute 5-10ml 0.9% saline intra tracheal/cardiac)	im, iv	X	X
Terbutaline 0.5mg/ml	B-adrenergic agonist - bronchodilator	0.01  up to 0.5 – dogs up to 1.0 - cats	0.1ml/5kg	sq, im, iv	X	X
Diphenhydramin e 50mg/ml	Antihistamine – allergic disease	1.0	0.1ml/5kg	im, iv	X	X
Doxapram 20mg/ml injectable/oral	Respiratory stimulant (repeat every 15-20 minutes)	5.0	1.25ml/5kg (oral solution – 1-2 drops under the tongue)	iv	X	X
Furosemide 50mg/ml	Diuretic	1-2 (up to 8)	0.1-0.2 ml/5kg (up to 0.8ml/5kg)	sq, im, iv	X	X
Dexamethasone 2mg/ml	Glucocorticosteroid – shock	5.0	12.5ml/5kg	iv	X	X
	Anaphylaxis	0.5	1.25ml/5kg	im, iv	X	X
Glucose 50%	Hypoglycaemia  Not for shock.		1-5ml (over 10 mins)	iv <i>slow</i>	X	X
Sodium bicarbonate 8.4% solution = 1mmol/ml	Cardiac arrest	1.0 mmol/kg over 1-2 minutes	5ml/5kg per	iv <i>slow</i>	X	X
Diazepam 5mg/ml	Seizures	1.0	1ml/5kg	iv or rectum	X	X
Atropine 0.6mg/ml	Bradycardia (care when used after medetomidine)	0.02-0.04	0.1-0.3ml/5kg	sq, im, iv	X	X

## **Annexure 4: IFAW recommended General Anesthesia Protocol for Dogs**

The International Federation of Animal Welfare recommends the following for chemical anaesthesia of dogs:

- medetomidine 0.02-0.03 mg/kg
- butorphanol 0.2-0.3 mg/kg
- ketamine 5-7.5 mg/kg

High-end doses should be used for smaller dogs and low-end doses for larger dogs. These preparations may be drawn into one syringe and administered intramuscularly in both cats and dogs. However, to reduce the incidence of 'ketamine shakes' and hypersalivation (which may occur in up to 30% of cats and dogs) butorphanol and medetomidine may be administered together first, then ketamine administered after 10 - 15 minutes.

After injection with the drug combinations the animal should be left in a quiet place for 10 to 15 minutes, and it must be checked every 5 minutes. Once the drug combination starts to have an effect, the animal should not be left alone (it may vomit and not be able to control its gag reflex).

### **For prolongation of anaesthesia (top-ups):**

At the first sign of change (lightening) in plane of anaesthesia, i.e. stretching, increased jaw tone, top-ups with medetomidine and ketamine will be necessary, using a ratio of 0.002 mg/kg medetomidine to 1 mg/kg ketamine.

If adequate duration of further anaesthesia is not achieved, give 0.004 mg/kg medetomidine to 2 mg/kg ketamine (same ratio but higher dose).

Both drugs are mixed in the same syringe and given either intramuscularly or intravenously (slowly to effect). If there is a delay in onset of action following intramuscular administration the dose may have been administered into a fascial plane. In this instance a repeat dose of the same volume can be readministered after 30 minutes.

### **Reversal of anaesthesia:**

Do not reverse the effects of medetomidine with atipamezole unless the patient develops hypothermia, cardiovascular or respiratory compromise or intra-operative complications that justify causing a rapid recovery from anaesthesia.

If reversal is indicated, and if anaesthesia has lasted more than 30 minutes, administer the following dosages of atipamezole intramuscularly for reversal of medetomidine:

Dog: give between 0.25 and 0.5 the volume of medetomidine for reversal (to effect).

More atipamezole may be given as indicated, especially if the duration of anaesthesia is long. However, the full dose (according to data sheet) of atipamezole for reversal should not be given.

All animals must be intubated securely throughout gaseous or chemical anaesthesia. All endotracheal tubes must be checked beforehand for complete patency and an effective cuff. The endotracheal tubes should be thoroughly cleaned, disinfected and then rinsed between patients.

Dogs should be intubated with a well-fitting endotracheal tube and the cuff inflated.

## Annexure 5: Six Criteria for Diagnosis of Rabies in Living Dogs

It is very hard to diagnose rabies in living dogs. Therefore, the study carried out by Dr Veera Tepsumethanon et al in 2005 in assessing the value of 6 criteria for the clinical diagnosis of rabies in living dogs is of especial significance and utility. Presented below is a synopsis of the study and details of the six criteria used to diagnose rabies in living dogs.

### A Brief Synopsis of the Study

**Objective:** The authors studied the predictive value of six criteria for clinical diagnosis of rabies in living dogs.

**Design:** Identify and test the criteria in a retrospective and prospective study.

**Material and Methods:** Both studies were conducted at the Rabies Diagnostic Unit, Queen Saovabha Memorial Institute, Thai Red Cross Society, Bangkok. The authors reviewed 1,170 dogs that were kept under observation for 10 days after they exhibited abnormal behavior. To test the predictive value of the six criteria, a prospective study involving 450 rabies suspected dogs was also performed.

**Results and Conclusion:** The six criteria demonstrated 90.2% sensitivity, 96.2% specificity and 94.6% accuracy for the clinical diagnosis of rabies. They can be used for a presumptive diagnosis

### The six clinical criteria studied were:

#### 1) Age of the dog?

- a) Less than 1 month —————> not rabies
- b) One month or more or not known ———> go to 2)

#### 2) State of health of the dog?

- a) Normal (not sick) or sick more than 10 days —> not rabies
- b) Sick less than 10 days or not known ———> go to 3)

#### 3) How did the illness evolve?

- a) Acute onset from normal health —————> not rabies
- b) Gradual onset or not known —————> go to 4)

#### 4) How was the condition during the clinical course in last 3-5 days?

- a) Stable or improving (with no treatment) —> not rabies
- b) Symptoms and signs progressing or not known —> go to 5)

#### 5) Does the dog show the sign of “Circling”?

*(It stumbles or walks in a circle and hits its head against the wall as if blind.)*

- a) Yes —————> not rabies
- b) No or not known —————> go to 6)

**6) Does this dog show at least 2 of the 17 following signs or symptoms during the last week of life?**

a) Yes \_\_\_\_\_> rabies

b) No or showing only 1 sign \_\_\_\_\_> not rabies

1. Drooping jaw
2. Abnormal sound in barking.
3. Dry drooping tongue.
4. Licking its own urine.
5. Abnormal licking of water.
6. Regurgitation.
7. Altered behavior.
8. Biting and eating abnormal objects.
9. Aggression.
10. Biting with no provocation.
11. Running without apparent reason.
12. Stiffness upon running or walking.
13. Restlessness.
14. Bites during quarantine
15. Appearing sleepy.
16. Imbalance of gait.
17. Frequent demonstration of the 'Dog sitting' position (Fig. 3).

These six criteria were also used in a prospective study involving 450 live dogs observed from 1997 to 2002. The sensitivity, specificity and accuracy of these criteria were calculated according to the method described by Mausner and Bahn(13).

Reference: Veera Tepsumethanon, DVM\*, Henry Wilde, MD, FACP\*, Francois X Meslin, DVM\*\*. Six Criteria for Rabies Diagnosis in Living Dogs. J Med Assoc Thai, Vol. 88 No.3, 2005, pp 419-422.

\* Queen Saovabha Memorial Institute, Thai Red Cross Society, (WHO Collaborating Center for Research on Rabies Pathogenesis and Prevention) \*\* World Health Organization, Geneva, Switzerland. *VT and HW are recipients of grants from the Natural Science and Technology Development Agency.*

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## Annexure 6: Driver Record Sheet

Name of Driver: \_\_\_\_\_

Date: \_\_\_\_\_

Number	Tag Number	Location (Owner Address)	Stray/Owner	Male/Female
1			S/O	M/F
2			S/O	M/F
3			S/O	M/F
4			S/O	M/F
5			S/O	M/F
6			S/O	M/F
7			S/O	M/F
8			S/O	M/F
9			S/O	M/F
10			S/O	M/F
11			S/O	M/F
12			S/O	M/F
13			S/O	M/F
14			S/O	M/F
15			S/O	M/F
16			S/O	M/F

Starting Km. : \_\_\_\_\_ Ending Km. : \_\_\_\_\_ Total Km. : \_\_\_\_\_

Signature of Driver

Signature of Dog Catcher

# Annexure 7: Surgery Case Record Sheet

Regn No \_\_\_\_\_

Location \_\_\_\_\_ Date of Pick-up \_\_\_\_\_

Date of Surgery: \_\_\_\_\_

**Approximate / Exact Age of Dog:** <4mths 4mth to 2 yrs \_\_\_\_\_ 2-5 yrs \_\_\_\_\_ 5-8 yrs \_\_\_\_\_  
>8yrs \_\_\_\_\_

Male / Female \_\_\_\_\_

Neuter / Spay \_\_\_\_\_ Other \_\_\_\_\_

Identification Marks: \_\_\_\_\_

Body Weight: \_\_\_\_\_ Kg

<b>MF</b>	
<b>Mange</b>	
<b>TVT</b>	
<b>Pyometra</b>	
<b>Pregnancy</b>	

Clinical Examination: General condition \_\_\_\_\_  
Anemic / Presence of ectoparasites / Any other \_\_\_\_\_

<b>Dog Carer's Name</b> _____
<b>Address &amp; Telephone / Mobile Number</b> _____
_____

Name of Operating Veterinary Surgeon \_\_\_\_\_ Signature \_\_\_\_\_

Name of Paraveterinarian \_\_\_\_\_ Signature \_\_\_\_\_

Name of Medication	Dose	Route	Total Dose
Xylazine	@		
Ketamine	@		
Thiopental Sodium	@		
Chlorpheniramine	@		
Diazepam	@		
Yohimbine	@		
Adrenaline	@		
Ivermectin	@		
Vitamin injections	@		
Meloxicam	@		
Ringer's Lactate	@		
Any other			

**Post-operative care:** Wound healing \_\_\_\_\_

Comments: Normal \_\_\_\_\_ Delayed (Presence of pus) \_\_\_\_\_

Antibiotic: Dose \_\_\_\_\_ Route \_\_\_\_\_ Start date \_\_\_\_\_ Duration \_\_\_\_\_

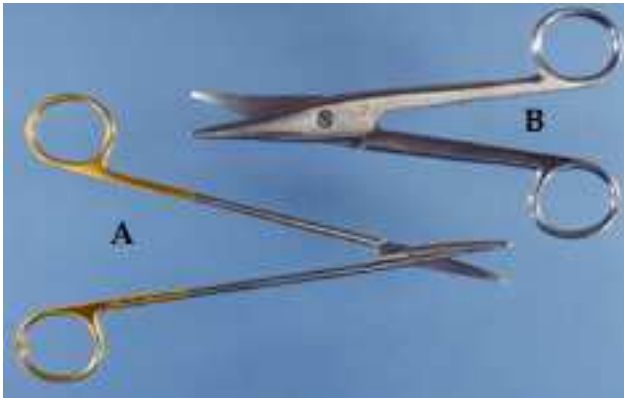
**Name of Rabies Vaccine** \_\_\_\_\_ **Route** \_\_\_\_\_ **Batch No** \_\_\_\_\_

Date of Release \_\_\_\_\_

Signature of Veterinary Surgeon \_\_\_\_\_



## Annexure 8A: Photographs of Selected Surgical Instruments

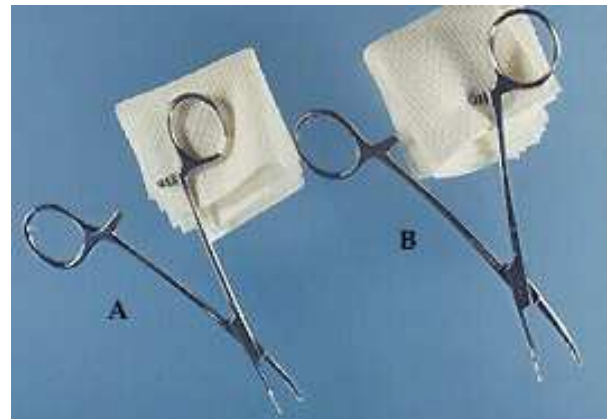


### Mayo & Metzenbaum Scissors

Mayo scissors (B) are used for cutting heavy fascia and sutures. Metzenbaum scissors (A) are more delicate than Mayo scissors and are used to cut delicate tissues.

**Kelly Hemostatic Forceps and Mosquito Hemostats** are both transversely serrated. Mosquito hemostats (A) are more delicate than Kelly hemostatic forceps (B).

### Kelly Hemostatic Forceps & Mosquito Hemostats



**Comparison of Kelly and Mosquito tips:** Mosquito hemostats (A) have a smaller, finer tip.

### Carmalt Hemostatic Forceps



It is heavier than Kelly hemostatic forceps and is preferred for clamping of ovarian pedicles during an ovariectomy surgery because the serrations run longitudinally.

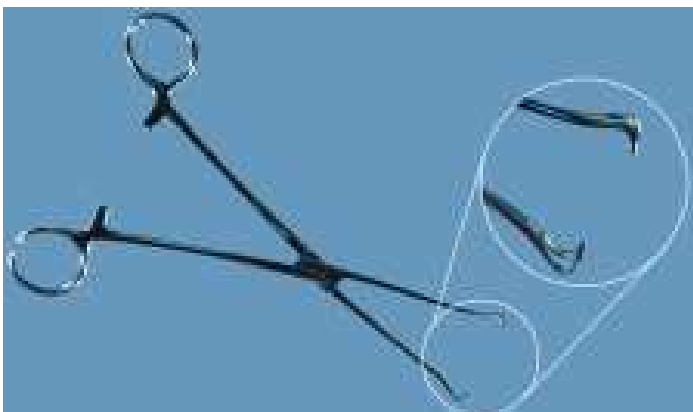
## Adsons Tissue Forceps



- The Adsons tissue forceps has delicate serrated tips designed for light, careful handling of tissue.

## Allis Tissue Forceps

- It has interdigitating short teeth to grasp and hold bowel or tissue.
- Slightly traumatic, used to hold intestine, fascia and skin.



## Babcock Tissue Forceps

- More delicate than Allis and it is also less directly traumatic.
- Used to atraumatically hold viscera (bowel and bladder).

## Mayo Hegar Needle Holder

- Heavy, with mildly tapered jaws.
- No cutting blades



Source: <http://cal.vet.upenn.edu/projects/surgery/index.htm>