

## Comparative evaluation of sterilization approaches in bitches

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### ABSTRACT

Eighteen adult, clinically healthy, mongrel bitches were divided into 3 groups of 6 animals each and were subjected to ovariectomy (OH) through 2 approaches viz., minilaparotomy (MLT) through rightflank without external skin sutures. MLT through rightflank with skin sutures (modification of the former) and the conventional midventral laparotomy in the 3rd group. It was found that minimum complications, minimum time taken ( $18.33 \pm 0.988$  minutes) and minimum cost (Rs.104.98 $\pm$ 3.455) for surgery was for MLT for OH without skin sutures. On the other hand the conventional midventral laparotomy for OH had maximum complications besides the longest duration of time ( $39.5 \pm 0.619$  minutes) and maximum cost (Rs.230.22 $\pm$ 17.208) for surgery.

**Key words :** Sterilization, bitch

Ovariectomy (OH) is the most acceptable approach of controlling the dog population and the nuisance of mating (Concannon and Meyers-Wallen, 1991; Hoque, 1991; Johnston, 1991; Salmeri *et al.*, 1991 and Olson and Johnston, 1993). In the present study minilaparotomy (MLT) through right flank with and without skin sutures for OH was compared with the conventional midventral laparotomy technique with skin sutures for OH in bitches in terms of time taken for surgery, cost effectiveness and peri and post operative complications.

The study was conducted on 18 apparently healthy mongrel bitches of neutering. These animals were divided randomly into 3 groups of 6 animals each.

OH was done under general anaesthesia employing atropine sulphate (0.044 mg/kg b.wt.) xylazine hydrochloride (1.1 mg/kg b.wt.) and ketamine hydrochloride (22 mg/kg b.wt.) administered intramuscularly followed by maintenance with ketamine hydrochloride intravenously (Lumb and Jones, 1996).

All the animals were kept off feed 12 hours pre-operatively and were restrained in left lateral or dorsal recumbency. The site was prepared for aseptic surgery.

#### Laparotomy approaches :

**Group A :** Animals of this group underwent OH by MLT from right flank using chromic catgut no.1 for ligation of

ovarian and uterine stumps. Closure of laparotomy wound was done in 2 layers. In the first layer peritoneum and muscles were closed using absorbable suture material, i.e., chromic catgut no.1 in simple continuous pattern. In second layer subcuticular sutures were placed using absorbable suture material i.e., vicryl no.0 (Polyglactin 910). External skin sutures were not placed.

**Group B :** Animals of this group underwent OH by MLT from right flank. Closure of the laparotomy wound was done in 3 layers, as described for animals of group A, with the only difference that skin wound was also closed using non absorbable suture material i.e., silk with interrupted horizontal mattress sutures.

**Group C :** Animals of this group underwent OH by midventral conventional laparotomy technique (Stone, 1985; Fingland, 1997).

#### Surgical Procedure

**Minilaparotomy spaying or OH through right flank :** A 1.5 - 2 inch long, horizontal skin incision was made on right flank 1 inch posterior to last rib and 1.5 - 2 inches below the lumbar transverse processes (Fig. 1). The external obliques and transverse abdominis muscles were separated by grid iron technique of muscle reflection (Wilson and Balasubramanian, 1967). Finally peritoneum was incised and no sooner the abdominal cavity was opened the right ovary was visible through the incision and its stump was ligated by transfixation with chromic catgut no.1 using the

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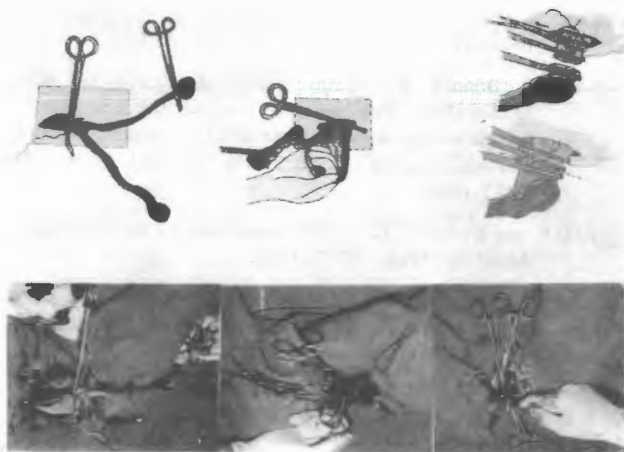


Fig. 1. Sterilization of stray bitches under ABC programme

standard 3 forceps tie (Stone, 1985 and Fingland, 1997). Then by holding the uterine horn left ovary was exteriorized by breaking its suspensory ligament and its stump was ligated in a similar manner. Finally, the body of the uterus was ligated. The laparotomy wound was closed as has been described for groups A and B.

**Conventional midventral laparotomy :** The surgical procedure adopted for spaying through the conventional midventral laparotomy was as described by Smith (1974), Stone (1985) and Fingland (1997). Post operatively all the animals were administered on the day of surgery and phenyl butazone @ 20 mg/kg b.wt. (Artizone-S) intramuscularly for 3 days. Daily dressing of wound was done with povidone iodine and external skin sutures applied in groups B and C were removed on 10th post operative day.

In animals of group A, time taken for surgery varied from 15-22 minutes, with a mean time of  $18.33 \pm 0.988$  minutes. The cost of surgery varied from Rs.96.69 to Rs.11.54, with a mean cost of Rs.104.98 $\pm$ 3.455. All animals had uneventful recovery, except one animal which had gaping of skin wound on 4th post-operative day. In animals of group B, the time taken for surgery ranged from 23-27 minutes, which a mean time of  $24.5 \pm 0.619$  minutes. The cost of surgery varied from Rs.106.62 to 127.47, with a mean cost of Rs.118.22 $\pm$ 3.356. Post-operative complications were observed in a 4 out of 6 animals and were restricted upto only suture being within 24 hours of operation, however, neither skin wound dehiscence, nor discharge from suture line were observed. In animals of group C, time taken for surgery varies from 38-42 minutes, with a mean time of  $39.5 \pm 0.619$  minutes. The cost

of surgery in animals of this group varied from Rs.199.47 to 288.62, with a mean cost of Rs.230.228 $\pm$ 17.208. The post-operative complications included suture being (4 animals) within 24 hours of operation, wound dehiscence (2 animals) on 4th post-operative day and evisceration followed by death (2 animals). The animals which showed wound dehiscence underwent resuturing but the same animals had evisceration and this complication occurred in both the animals during right hours.

The data were statistically analysed and compared using analysis of variance (ANOVA) as per the procedure expalined by Duncan's new multiple range test (Steel and Torrie, 1980; Snedecor and Cochran, 1981) and it was found that MLT of OH by right flank approach where skin was apposed with subcuticular sutures using vicryl and no external skin sutures were applied, provided a satisfactory healing with minimum time taken for surgery, minimum cost incurred and the least post-operative complications were observed. It also reduced hospitalization period and was rated as most superior technique amongst all diverse approaches for OH used in the present study and most suitable for use in mass sterilization programme of bitches. OH through conventional midventral laparotomy appeared risky as besides being costliest it consumed maximum time for surgery and had maximum associated serious complications as evisceration too. These complications are possibly because of more pressure of viscera on longer suture line due to digestion of absorbable suture material which makes muscles sutures weak (Pearson, 1970). Besides this other complications of midventral celiotomy as reported by Berzon (1979), Pollari *et al.* (1996) and Fingland (1997) are wound dehiscence, seroma formation and self inflicted trauma of abdominal wound. Further in group A where skin wound was apposed by sub cuticular sutures (without external skin sutures), had satisfactory healing with minimum post-operative complications and had no incidence of suture biting. On the other hand, in the groups (B and C), where external skin sutures were applied there was an incidence of 66.6% cases of suture biting possibly due to greater irritation caused by the skin sutures and the habit of dogs to chew with sutures within 24 hours after surgery and these findings were in consonance to the observation of Rice and Dewell (1976), Aronsohn and Fagella (1993) and Theran (1993).

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