**Chapter-I**

**INTRODUCTION**

Bangladesh is an agrobased country. The livestock population of Bangladesh is a handsome amount. There are about 23 million cattle, 24.16 million goats, 1.39 million buffalos and 3.07 million sheeps ***(****DLS, 2010-11****).*** Most of these animals are reared in rural areas under traditional management system. Goat is an important source for delicious meat and skin and good income source for the farmers. Bangladesh is mainly a Muslim country and from this point of view, castration is important. In our country, goat are castrated both open and close method. In the rural and remote areas castration is performed generally by close method. All castrated and entire goats were browsed during day time and supplemented with concentrate at 2.5% of body weight in DM per day which adjusted with changes in their body weight. Castrated animals are usually less aggressive and easier to manage. Meat from castrated males have less ‘goaty smell’ or tainted odor in the meat from intact buck, carcass composition and weight development, this is one of the main effects of castration. In general, the following effects are noted: carcasses from castrated sheep/goats have more fat tissue and castration could retard growth and reduce the quantity of lean meat if done late (after 6 months of age). To increase the average body weight farmer generally choose to castrate their sheep and goat. Not much study has conducted about the tropic effects of castration on the growth rate of kids in Bangladesh. Complications are rare in surgical method. It is easy to perform and if done quickly, it appears to be associated with limited stress. So, by considering the above important issue I conducted my study with the following objectives.

**The main objectives were as follows:**

* To study the growth rate of kids after castration in proper ages.
* To study the incidence of age of castration.
* To study the complications after castration.

**Chapter-II**

**MATERIALS AND METHODS**

 **2.1 Study population and study period**

The study was conducted on 9 bucks from mid January to mid April at The Upazilla Veterinary Hospital, Kumarkhali, Kustia and S. A. Quaderi Teaching Veterinary Hospital, CVASU, Chittagong under one year- internship programme.

**2.2 Data collection**

Data of clinical and physical history were collected from the owners when they came to the hospital for castration of their goats.

**2.3 Study design**

 Before castration, all kids received a tetanus prophylaxis of 1500 IU of Tetanus-Toxoid (TT) before one week of operation for all groups. For Group1, the buck kids were treated with anthelmintic and vitamin. Group 2 was not treated with anthelmintic and vitamin. Group1 and Group 2 were castrated by open method and Group 3 was castrated by closed method.

**Table 2.1: Number of buck kids in each group**

|  |  |
| --- | --- |
| **No. of groups** | **No. of buck kids** |
| Group 1 | 2 |
| Group 2 | 5 |
| Group 3 | 2 |

**2.4 Procedure for method of castration**

**i) Castration by Open Method**

Preparation of animal:

Before operation, information about heart rate, respiration rate, body temperature, body weight, and dehydration were noted down. The buck kids were restrained manually. The operation site was clipped and shaved. Finally, 70% Ethanol and 30% Povidon Iodine (Povisep) were applied to make the operation site aseptic and dry.

**Instruments:** Razor, blade, scalpel handle with blade, artery forceps, needle, scissors, simple forceps.

**Appliances:** Towel, catgut, gauze, cotton, draper.

**Anesthesia**:

* 2-3ml of Jasocaine (2% Lidocaine HCl, Local anesthetic agent) was injected S/C at around the base of the scrotum (1ml at each Spermatic cord). At the tip of the scrotum, 1ml of Jasocaine was also injected.

**Operation procedure:**

* Soon after local block of nerve of scrotum, grasping the testes towards point of the scrotum, stretched it tightly and incised the dartos and then tunica vaginalis, the testicle was exposed by pressure.
* The castration was done by the open uncovered method. Avascular part was cut and tunica vaginalis was pilled out from the testes and pushed in place of the spermatic cord 2 cm above the epididymis.
* An artery forceps was applied above it, catgut was used for ligation by anchoring. The spermatic cord was then cut with scissors 2 cm below the ligature.
* The testicle was removed by holding it with forceps. Another testicle was also removed by the same way. Antibiotic powder (sumid vet powder) was applied at the site. Blood was soaked by gauge pack.
*  The post-operative treatment was given by injection with a broad spectrum antibiotic(Streptopen) and antihistamine(Histavet) for 3days.

**Figure 1: Castration by open method**

**ii) Castration by Close method (By Burdizzo’s Castrator)**

This method is known as a bloodless method since no cutting is done and when is done properly the skin is not even broken. Care must be taken to be sure that both cords have been properly crushed ***(****Battablia and Mayrose, 1981).*

Grasp the scrotum in one hand and manipulate until the testes down into the scrotum and the spermatic cord between fingers. Place the jaws of the emasculatome onto the upper scrotum, just below the rudimentary teats. Position the jaws so that above two-thirds of the scrotum is crushed when the jaws are closed. Leave the instrument closed for 15 to 20 seconds. Open the jaws and move the instrument about ½ inch lower and crush the other side of the scrotum (*Battablia et al., 1981****).*** The spermatic cord is very elusive when try to crush it ***(****Ensminger and Parker, 1986****)***

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 **Figure 2: Castration by close method**

**3.5 Live weight estimation**

The live weight under a particular age group is important. The body length from point of shoulder to point of pin bone (tuber coxae of the hip bone) and heart girth were measured using measuring tape and live weight of each animal was calculated according to the method of *Hossain and Akhter (1999)* as follows:

 Live weight (kg) = body weight×(heart girth)2

 300×2.2

Besides, by using the weight balance body weight was measured.

**2.6 Statistical analysis**

The collected data were edited and the mean and standard deviation of live weight at different categories of ages of animal were noted down by using Microsoft Excel and a software STATA/IC-1. The differences among the three groups were performed by using the least significant difference test at P≤ 0.05 and P≤0.01.

**Chapter-III**

**RESULTS**

As shown in the table (3.1) the average body weight gain of kids were significant by method of castration. Castration in older kids took significantly (P< 0.01) increase body weight gain in open method. Group 2 took significantly (P<0.01) increase body weight than other two groups.

**Table: 3.1 Effects on body weight before & after castration of 3 Groups**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Category | Variable | Observation | Mean wt (kg) | Standard Error of Mean | 95%CI | P value |
| Group1 | Before | 3 | 4 | 0.4149967 | 3.0612-4.9387 | 0.0001 |
|  | After1 | 3 | 5.55 | 0.3609401 | 4.7334-6.3665 | 0.0000 |
|  | After2 | 3 | 7.2 | 0.2905933 | 6.5426-7.8573 | 0.0000 |
| Group2 | Before | 3 | 6.7 | 0.4666 | 5.6443-7.7556 | 0.0001 |
|  | After1 | 3 | 7.9 | 0.493288 | 6.7841-9.0158 | 0.0001 |
|  | After2 | 3 | 10 | 0.65404 | 8.5204411.47956 | 0.0000 |
| Group3  | Before | 3 | 3.4 | 0.16329 | 3.0305-3.7694 | 0.0000 |
|  | After1 | 3 | 4.3 | 0.18559 | 3.8801-4.7198 | 0.0000 |
|  | After2 | 3 | 6 | 0.182574 | 5.5869-6.4130 | 0.0000 |

Before = Before castration

After 1= First observation, 28 days after operation

After 2= 30 days after fist observation

As shown in table (3.2) the incidence of age for castration between 1 to <2 months. But the minimum age of castration is 2 months or above (Hossain and Akhter, 1999**)**. But the owners are not conscious about the age of castration.

**Table 3.2 Age based castration percentage in goat**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Age | Open  | Closed  | Total No. of castration | % of castrationby age level |
| <1month | 0 | 2 | 2 | 16.67 |
| 1 to<2 months | 3 | 2 | 5 | 66.67 |
| 2 to above | 2 | 0 | 2 | 16.67 |
| Total | 5 | 4 | 9 |  |

Table 3.3 Revealed that most of castrated kids were complication free. Castration failure was not recorded either for open and close method.

**Table 3.3 Complications after castration**

|  |  |  |
| --- | --- | --- |
| Group | Method | Complications |
| 1 | Open | 0 |
| 2 | Open | 1 |
| 3 | Close | 0 |

**Chapter-IV**

**DISCUSSION**

The proportionate mean weight gain of castrated animal was higher in Group 2 (antibiotic open method) and the mean weight gain value of Group 2 is 8.2 which is significantly higher than other two groups. The mean weight gain value of Group 1 and Group 3 were 5.58 and 4.56 respectively. It may be due to less disease condition in antibiotic treated groups. Besides, in Group 2 the average age is better than other two groups. So, the stress reducing capacity are more in Group 2 than other two groups so weight gain may be higher in this group. Another cause of higher weight gain may be due to higher muscle attachment area in higher aged group animal.

In S.A. Quaderi Teaching Veterinary Hospital, the surgical castration are performed in a strict sterile environment as far as possible and that is the main reasons behind this less postoperative complications. Though some complications were noted, they were mainly found in case of goat. These might be due to improper postoperative care and management. But the causes of complications vary considerably from practice to practice and are generally reported to be higher in studies of surgeries performed by the students.

**Chapter-V**

**CONCLUSION**

As some of buck kids have to be castrated to make them docile and to remove offensive odor from meat, thus from welfare point of view, it is important to choose the safest and less painful method of castration that could increase the live weight gain. The percentage of live weight gain was increased with age and method of castration which indicates that live weight gain in older ages increased and reduced complications than earlier. The general recommendation is to castrate kids between 1 to below 2 months. The present study concluded that,

* Group 2 (p<0.01) is superior than other two groups for live weight gain.
* Incidence of age of castration was about one to two months.
* After castration complication was less.

**Chapter-VI**

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**APPENDIX**

**Table-1:** **Antibiotic ,vitamin and anthelmintic treated group:(Open method)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Sl. no. | Age(Day) | Initial weight (kg) | After 1months (kg) | After2 months(kg) | Average | Complications |
| 1 | 38 | 3.5 | 4.5 | 6.0 | 4.66666 | - |
| 2 | 30 | 3.0 | 4.5 | 6.5 | 4.66666 | - |
| 3 | 42 | 3.0 | 5.5 | 7.0 | 5.16666 | - |

 **Table-2: Antibiotic treated group (Open method)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Sl. no. | Age(days) | Initial weight( kg) | After 1 month(kg) | After2 months(kg) | Average | Complications |
| 1 | 60 | 7.0 | 8.0 | 9.5 | 8.16666 | - |
| 2 | 30 | 6.0 | 7.0 | 8.5 | 7.16666 | - |
| 3 | 45 | 5.0 | 6.5 | 8.0 | 6.50000 | - |

**Table-3: Burdizzo’s group(Closed method)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Sl. no. | Age( Days) | Initial weightKg | After 1 monthkg | After 2 monthsKg | Average | Complications |
| 1 | 27 | 3.50 | 4.00 | 6.00 | 4.5000 | - |
| 2 | 18 | 3.00 | 4.00 | 5.50 | 4.1666 | - |
|  3 | 35 | 4.00 | 4.50 | 6.00 | 4.8333 | - |

**Biography**

I’m Iqbal Mahmud. I’m from Khoksha, Kustia. I completed my Dakhil and Alim from Gopgram Alia Madrasha, Kustia and Pabna Islamia Madrasha, Pabna with GPA-5 respectively. Now I’m a internship student of Doctor of Veterinary Medicine, Chittagong Veterinary and Animal Sciences University. In future I want to work as a researcher. I’m interested to work in poultry & large animal sector. My aim is to establish a veterinary health center in field level to serve the farmer and also create new techniques in veterinary profession.