

Surgical Management of Fibroma in an Indigenous Dog



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List of abbreviations

Abbreviations	Elaboration
HCl	Hydrochloride
SAQTVH	Shahedul Alam Quaderi Teaching Veterinary Hospital
CVASU	Chattogram Veterinary and Animal Sciences University
CBC	Complete Blood Count

Abstract

A 5-year-old non spayed female indigenous stray dog weighing 12.6 kg arrived to S.A. Quaderi Teaching Veterinary Hospital with a five-month history of a hard lump that was irregularly shaped and gradually growing larger on the right hind limb at the level of the stifle joint. Clinical examination and subsequent X-ray confirmed the mass as a tumor, leading to the decision to perform a complete surgical excision. Before surgery, CBC, biochemical tests were done. The dog was given xylazine HCl as a premedication, and ketamine hydrochloride and diazepam were used to induce and maintenance of general anesthesia. To ensure aseptic conditions, the surgical site was carefully prepared. A curved incision was made around the base of the tumor mass, and hemostasis was achieved. After surgery, the excised tumor was incised, and gross lesions revealed that it was fibroma. Post-operatively, the dog was prescribed antibiotics, non-steroidal anti-inflammatory drugs, antihistamines, dextrose, amino acid preparation, mineral supplements and povidone iodine ointment. The dog recovered successfully without complications during the follow-up period up-to 25 days. This case highlights the importance of diagnosis, meticulous surgical techniques, and post-operative care in the successful management of tumor masses in dogs.

Keywords: Dog, Fibroma, Surgical management

Chapter 1

Introduction

Fibromas are benign neoplasm originate from skin and subcutaneous tissue cell named fibroblasts. Most of the time, these are single tumors. Many times, these tumors develop in the head, groin, flank, and limb areas (Goldschmidt and Hendrick, 2002). Fibromas can be soft, firm or rubbery in consistency, pedunculated or non-pedunculated, spherical or oval in shape. These can contain skin pigment melanin (Conroy, 1983).

Among 88 cases of tumor of dog, 19.3% cases are fibroma. The cases of tumor are more common in canine than other species. In case of age distribution, maximum number of tumorous growths (25%) occur in the age of 4-6 years. Both male and female animals can be affected by this type of neoplasm. But research findings say, female animals (53.4%) are more vulnerable to this disease condition than male (46.5%) (Lather *et al.*, 2017). Among different breeds of dog, fibroma are most prevalent in non-descript (ND) dogs (34.97%) than other breeds (Senthil *et al.*, 2020).

The causes act behind these tumorous growths can be many including genetics, long term stress, radiation, viruses, hormonal imbalances etc. Earlier injury or inflammation can also be reason (Jubb and Kennedy, 1963). Continuous exposure of skin to different types of chemical and physical agent can induce these type of skin tumors like fibroma (Hargis *et al.*, 1992).

Fibroma can be diagnosed by fine needle aspiration technique and histopathological examination. But the sole method for confirmatory diagnosis of fibroma is histopathological examination of the mass. Fibromas are characterized by uniformly sized, spindle shaped cells containing light blue cytoplasm (Cowell *et al.*, 2007). Another research says that, the benign fibrocytes of fibroma are homogeneous, possessing oval, normochromic nuclei and indistinct cytoplasm with a rare presence of mitotic figures (Goldschmidt and Hendrick, 2002).

As these tumors are visible and palpable, it is easy for client or clinician to look for additional treatment options (Slatter, 2003). Complete surgical removal is the best treatment option of these slow growing neoplasms (Goldschmidt and Hendrick, 2002).

There is a very less data and little research work of surgical outcome of fibroma of dog in aspect of Bangladesh, so working with this case is important.

Therefore, the objectives of this study are-

1. To find out the cause of fibroma in dog.
2. To evaluate the surgical outcome of fibroma in dog.

Chapter 2

Case Presentation

2.1 Clinical history and observation

A 5-year-old non-spayed female local stray dog weighing 12.6 kg was brought to S.A. Quaderi Teaching Veterinary Hospital, CVASU with a history of large irregular shaped hard mass hanging at right hind limb at the level of stifle joint (Fig. 1). It was gradually enlarging since last five months. Physical examination revealed, temperature was 101.5⁰F, mucous membrane was pale. Heart rate was 90 bpm and respiration rate was 22 times/minute which were within normal range. The dog felt pain on palpation and the growing mass felt hard. The mass was irregularly spherical shape and ulcerated. X-ray and blood test were done for further investigation. X-ray revealed it as a tumor mass (Fig. 2). X-ray of lungs showed no metastasis (Fig. 3). Biochemical tests include glucose (61.65mg/dl) and total protein (4.18g/dl) were below normal range. On CBC there found low level of hemoglobin (8.9g/dl) which indicates anemia. The case was diagnosed as fibroma on the basis of clinical history, clinical signs and X-ray and complete surgical excision was decided as treatment. The excised tumor was incised, and gross examination also revealed the case as fibroma.

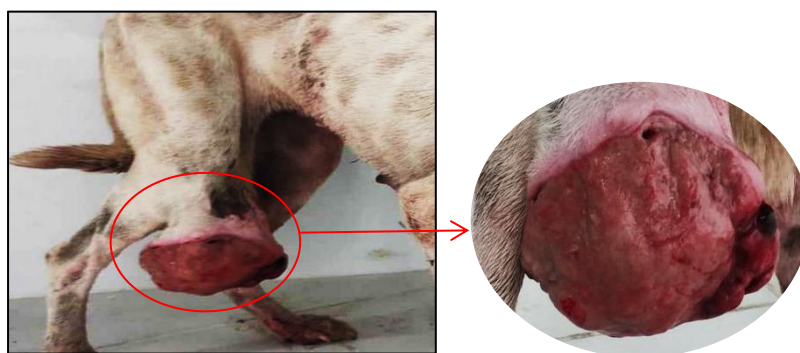


Fig. 1: The dog with tumor mass



Fig. 2: X-ray of tumor mass

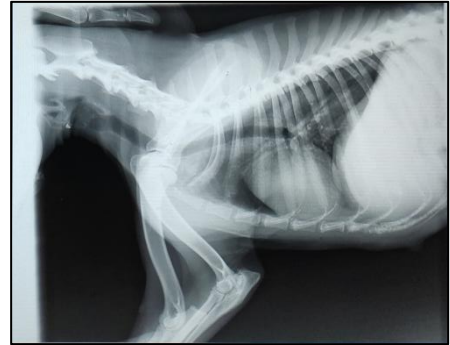


Fig. 3: X-ray of lung

2.2 Surgical Procedure

2.2.1 Preparation of patient

The dog was fasted for 6 hours. The surgical site was shaved cleanly first (Fig. 4). After pre-medication the site was prepared by using savlon three times, 7.5% povidone iodine three times and lastly alcohol three times. The patient was ready for aseptic surgery (Fig. 5).

2.2.2 Anesthesia

The dog was premedicated with Xylazine HCl (Xylazine, Indian Immunologicals Ltd, India) @ 1mg/kg body weight intramuscularly for sedation. The general anesthesia was induced by Ketamine hydrochloride (Ketalar, Popular Pharmaceuticals Ltd, Bangladesh) @ 5mg/kg body weight and Diazepam (Sedil, Square Pharmaceuticals Ltd, Bangladesh) @ 0.5 mg/kg body weight and maintained by half of initial dose, intravenously.

2.2.3 Surgical technique for excision of tumor mass

The dog was recumbent at lateral recumbency kept the affected side upward. A curved incision was given around the base of the tumor mass (Fig. 6,7). Bleeding was checked by using artery forceps. The tumor mass was then excised completely with deep tissue around the mass to avoid future recurrence (Fig. 8).

Double suture was given in deep subcutaneous tissue along with muscle to close dead space between subcutaneous tissue and muscle using absorbable suture material Catgut size 1 by simple continuous suture (Fig. 9). Subcutaneous tissue was sutured by subcutaneous suture using Catgut size 1 (Fig. 10). Then skin wound was closed by interrupted suture (horizontal mattress) using Nylon (Fig. 11). Povidone iodine was applied on surgical wound (Fig. 12)

and then applied a soft cotton bandage on the site (Fig. 13). The excised tumor mass was incised for gross examination (Fig. 14).



Fig. 4: Shaving of Surgical site



Fig. 5: Aseptic surgical site



Fig. 6: Skin incision (Elliptical)



Fig. 7: Incision on sub-cut tissue



Fig. 8: Excision of tumor mass



Fig. 9: Suturing muscle with sub-cut tissue

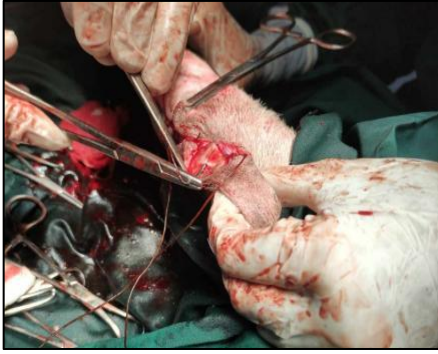


Fig. 10: Subcutaneous suture



Fig. 11: Skin suture



Fig. 12: Applying Povidone iodine



Fig. 13: Bandaging wound site

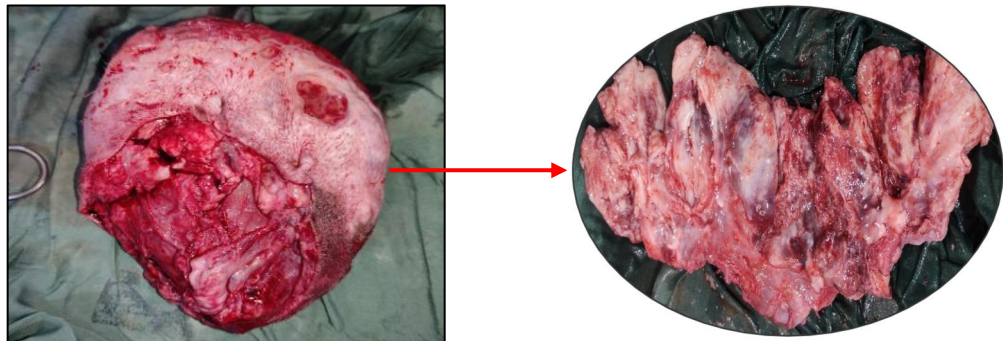


Fig. 14: Excised tumor mass and gross examination

2.2.4 Post-operative care and advice

For post-operative care, the dog was prescribed with antibiotic injection ceftriaxone (Triject vet, Eskayef Pharmaceuticals Ltd, Bangladesh) @ 50mg/kg body weight for 5 days, non-steroidal anti-inflammatory drug meloxicum (Melvet, TECHNO Pharmaceuticals Ltd, Bangladesh) @ 0.3mg/kg body weight for 3 days, antihistaminic drug pheniramine maleate (Hista-vet, ACI Limited, Bangladesh) @ 1.5mg/kg body weight for 5 days, glucose preparation (Dextrose 25%, OSL Pharma Ltd, Bangladesh) @ 25 ml twice daily for 3 days , amino acid preparation (Aminovit Plus, Popular Pharmaceuticals Ltd, Bangladesh) @ 1.5ml daily for 15 days, mineral supplement iron hydroxide dextran complex (Hempro vet, Square Pharmaceuticals Ltd, Bangladesh) 1ml daily for 10 days and a povidone iodine ointment (Viodin, Square Pharmaceuticals Ltd, Bangladesh) for applying on wound site for 14 days.

The owner was advised to not to wet the operative place, limit the dog's excessive movement and administer all the drugs regularly, give proper attention so that the dog could not bite or scratch the operative site. Also told to provide clean dry place and nutritious food to offer the dog which will help in quick recovery. The dog owner was told to take the dog to the hospital after 14 days to cut the sutures.

Chapter 3

Results and Discussion

3.1 Result

After completing surgery, corneal and palpebral reflexes was back within 10 minutes, pain sensation was recovered in 15 minutes and the dog fully recovered from anesthesia within 35 minutes without any anesthetic hazard. The wound site was healed completely within seven days of surgery. No complications were noticed during the 25 days follow-up period.

3.2 Discussion

Fibroma are benign neoplasm that can occur in any animal species at any age. Lather et al. (2017) said that, tumor are more common in canine family than other. In this study, affected animal was a dog and Lather et al. (2017) also reported that the fibroma was found in dog. Lather et al. (2017) also said that, this tumorous growth are maximum (25%) in middle age group of animal that is 4-10 years of age. The dog in this case study was 5 years old that concurs with research findings. According to Lather et al. (2017) sex of animal had a effect in tumor development. Female animals (53.4%) get more affected by this neoplasm than male (46.5%). The dog in this study was female which complies the findings of Lather et al. (2017). Senthil et al. (2020) said that, these types of tumor condition more prevalent in non-descript (ND) dogs (34.97%) than other breeds of dog. In this study, the dog was a stray, non-descript dog which agrees the findings of Senthil et al. (2020).

Conroy, (1983) said, fibromas can be firm or soft, pedunculated or not. In the case of tumor, the mass was irregularly spherical shaped, gray white grossly, hanging in right hind limb at the level of stifle joint. It was solitary, firm on palpation and pedunculated which agrees with Conroy (1983). According to Goldschmidt and Hendrick (2002), greyish white color seen on cut section of the tumor mass. After surgical excision, the tumor mass was sectioned and found greyish colored on cut section which concurs findings of Goldschmidt and Hendrick (2002). Also, Goldschmidt and Hendrick, (2002) said, fibromas are more common in head, flanks, limbs and groin region. The fibroma in the dog of this study was in right limb which agrees findings of Goldschmidt and Hendrick (2002).

Several factors can act as cause of these fibromas including genetics, long-term stress, radiation, chemicals, viruses, hormonal imbalances etc. According to Jubb and Kennedy, (1963), a history of earlier injury or inflammation on that site can be reason of fibroma. The dog in this case was hit by bullet on the site which can be a provoking cause of the tumor mass.

Surgical excision for fibroma under general anesthesia found completely curative without any complication in Gokulakrishnan et al. (2020) and Gupta et al. (2020). In this study, complete surgical excision was remedial and no complications found in follow-up period which concurs findings of Gokulakrishnan et al. (2020) and Gupta et al. (2020).

Chapter 4

Conclusion

The case report concluded that, fibroma are benign tumors that is more found in non-descript dog. The tumors are more prevalent in the female dog at the age of 4-10 years old. Cause of the fibroma was injury or trauma. Surgical outcome was satisfactory, and no complications were found postoperatively up-to 25th day. Similar surgical technique can be applied in field condition for successful outcome.

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Biography

I am **Mohammed Mynul Hasan**, son of Mohammed Atiqul Haque and Jahanara Begum. I have completed my Secondary School Certificate from Nasirabad Government High School in 2014 and Higher Secondary School Certificate from Hazera-Taju Degree College in 2016. I am an intern veterinarian at Chattogram Veterinary and Animal Sciences University, Bangladesh under the Faculty of Veterinary Medicine. I have a strong interest in veterinary medicine research, and I want to apply my skills and ideas to serve the country. so that we can overcome the challenges our field is currently facing.