

## INCIDENCE AND SURGICAL MANAGEMENT OF SOME NEOPLASMS IN RUMINANTS

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### ABSTRACT

*In the present study, 65 cases of benign and malignant neoplasms were described grossly and histopathologically, and surgically treated among examined ruminants belonging to a private farm stallions at Dakahla Province and cases collected during field training trips beside those animals admitted to the Surgery Clinic of the Mansoura Teaching Hospital of the Fac. of Vet. Med., Mansoura University between 2003 and 2006. The affected animals were subjected to full-informed history, physical and clinical examination. Prevalent data such as animal's age, breeds, sex and anatomical locations of the tumours as well as description of the lesions were reported. In addition to confirmative histopathological examinations were performed. The operated cases were followed up for 4-6 months for evaluation the rate of recovery or recurrence.*

*The encountered neoplasms were 2-fibromas, a fibromatous epulis, a fibroadenoma, 4-fibropapillomas, 25-cutaneous papillomas, 8-keratoacanthomas, 2-fibrosarcomas, 21-squamous cell carcinomas and a lymphosarcoma.*

*Benign neoplasms were more prevalent (63.1 %) than malignant ones (36.9%). All ages were found to be involved, malignant neoplasm were more dominant in aged animals while the benign ones appeared more frequently in young ages under 2 years.*

*Follow up information from the operated animals revealed good recovery without recurrence except a buffalo and ewe with squamous cell carcinoma and a cow with fibrosarcoma had recurred after 2-3 months respectively. Surgical excision was inadvisable in six cases (five cows and an ewe) of squamous cell carcinomas showing severe local invasiveness and involvement of the regional lymph nodes and in a case of lymphosarcoma.*

### INTRODUCTION

Neoplasms of the skin and subcutaneous tissue are one of the most frequently encountered tumours in domestic animals. They are ectodermal, mesodermal or melanocytic (Cotchin, 1984;

**Pulley & Stannard, 1990 and Yagor & Scott, 1993).**

Tumour involving gingiva at the dental border or interdental means epulis. The growth is usually seen as longitudinal hard mass almost parallel to the cheek teeth. Lower gingiva is usually involved. The tumour has been recorded in cattle, buffaloes and camels. The growth could be removed under general anesthesia by a thorough dissection. The diffuse bleeding is controlled by packing and cauterization (**Ramadan & El-Hassan, 1980; Bcbory et al., 2001 and Herbish et al., 2001**).

Neoplasms of the mammary gland are extremely uncommon in large animals. Out of 1339 neoplasms reported from the four common domestic species, only seven mares and one cow are affected with mammary tumour (**Priester & McKay, 1980 and Beamer & Simon, 1983**).

Fibropapilloma is the most common penile or preputial neoplasm in bull. It occurs mostly in young and sexually mature bull less than 3 years of age. The causative agent is bovine papilloma virus type 2. It may be single or multiple up to several cm in diameter and may be interfering with protrusion of the penis from the prepuce (**Walker & Vaughan, 1980 and Stedham, 1984**).

Cutaneous papillomas (Warts) are benign neoplastic growth of the skin and mucous membrane; are observed world wide in human and a variety of animals. They are caused by species-specific papilloma viruses (**Olson, 1983**). They occur as single or multiple growths that are rough and cauliflower in appearance. It occur any where but most common site are the skin of the head, neck, shoulder, udder or teats and brisket in cattle and muzzle and genitalia in horses, camel and buffaloes (**Pulley & Stannard, 1990; Khalafalla et al., 1998 and Klinc & Wernery, 1998**).

Squamous cell carcinoma (SCC) is a malignant neoplasms of squamous epithelium of any cutaneous area especially the exposed areas in light haired animals, mucocutaneous junction (eye, mouth, vulva and anus) nailbed and horn core (**Stedham, 1984 and Anderson & Badziach, 1991**). Ocular and periorbital squamous cell carcinoma (OSCC) is a common locally invasive tumour of the eyes and eyelids of older cattle. Nearly all breeds are susceptible; however Herford and Shmmental breeds and their crosses are most often affected; also seen in Holstein-Friesian (**Daniel & McLaughlin, 1992; Willen et al., 1995 and Hirsbrunner et al., 1998**).

The etiology of OSCC is not fully known but several factors are reported for development of the disease either alone or in combination. Theses include genetic predisposition, sunlight radiation, viruses, irritation caused by dust, sand, insects and chemicals. Non pigmented orbital skin act as a risk factor (**Russell et al., 1976; Daniel & McLaughlin, 1992; Hirsbrunner et al., 1998**).

Surgical treatment of cancer eye was possible particularly in early stages. Surgical resection of the third eyelid or removal of the whole eye was resulted in a permanent cure. However more than 60% of cases recur and it is not good practice to continue to breed from treated cattle or from their progeny (Robert, 1984; Misk et al., 1984; Kharole et al., 1996 and Crispin, 2005).

Lymphosarcoma is most frequently seen neoplasm in cattle. This neoplasm is also known as malignant lymphoma, leucosis, lymphomatosis or lymphoid leukemia if the peripheral blood is involved. Bovine lymphoma is associated with bovine leukemia virus although not all examples results from this viral infection. Sporadic lymphoma occur in 3 form, juvenile, thymic or mediastinal and cutaneous (Miller, 1980 and Stedham, 1984).

The aim of the present study is to throw light on the gross and histopathological features of various types of neoplasms in ruminants, reporting their common types, sites of occurrence and clear out the operable cases from inoperable ones.

### **MATERIALS AND METHODS**

The present study was carried out between 2003 and 2006 among the ruminants belonging to a private farm stations at Dakahlia Province and cases collected during field training trips beside those animals admitted to the Surgery Clinic of the Mansoura Teaching Hospital of the Fac. of Vet. Med., Mansoura University. The general health condition, physical examination of each overgrowth including location, size and shape were recorded. Prevalent data such as age, breeds, sex, description of the lesions and state of the neighbouring superficial lymph node(s) were reported.

The masses were cleaned, measured and photographed. The observed lesions were surgically treated when indicated through a wide surgical excision (in the surrounding healthy tissues by 1-2cm) was attempted under the influence of xylazine (Xylaject, ADWIA Co., A.R.E.) at a dose of 0.05 mg/kg. b.w. for large ruminants and .1 mg/kg. b.w. for sheep premedicated with atropine sulfate at a dose of 1-2 mg/ 40 kg.b.w. and local analgesia using Lidocaine Hcl 2%

Treatment of cancer eye depends on its location and degrees of involvement of the ocular structures. Surgical procedure includes third eyelid resection or enucleation of the invaded entire globe and lid margins was performed after Weaver et al. (2005) when the tumours have spread to the extent that the eyeball was blind and parotid or retropharyngeal lymph nodes were not involved.

#### Procedure of third eyelid resection :

The animal was tranquilized and maintained in standing position; analgesia was induced by local infiltration of the base of the eyelid after instilling topical anesthetic solution (0.5% Lidocaine) into the conjunctival sac. The third eyelid was drawn out by traction with forceps where it was deeply excised to cartilage with curved scissors. The haemorrhage was controlled with adrenaline-soaked swab.

Removal of the epulis was performed through maximal opening of the oral cavity by suitable mouth gag.

Penile Fibropapilloma was surgically removed under the effect of the heavy tranquilization of propionyle promazine (Combelen, Bayer Leverkusen, Germany) which facilitate extension of penis which maintained by a gauze tied. The penis was prepared by washing with povidone iodine. The haemostasis was accomplished during interference by applying a gauze tourniquet proximal to the surgical area. The tumor was rotated to expose the stalk-like base and the mass was carefully dissected from the penis. The oozed blood vessels were ligated. The resultant wound was closed by chromic cat gut No.0. The penis was covered with antibiotic ointment.

Vaginal fibropapilloma was debulked surgically to the level of the surrounding mucous membrane under the effect of caudal epidural analgesia using Lidocaine Hcl 2%.

Samples of neoplasms were fixed in neutral buffered Formalin 10%, dehydrated in serial grades of ethyle alcohol and cleared in xylene. The tissue specimens were then embedded in paraffin waxes, sectioned at 4-6 microns, stained with Hematoxyline and Eosine and examined microscopically according to Bancroft et al. (1990).

## RESULTS

In the present study 65 ruminants (46 cattle, 9 buffaloes and 10 sheep) of both sexes and different age showed various types of neoplasms of different sizes and characters in different locations of the animal body (Table 1). The diagnosed neoplasms were 2-fibromas, a fibromatous epulis, a fibroadenoma, 4-fibropapilloma, 25-cutaneous papillomas, 2-fibrosarcomas, 8-keratoacanthomas, 2 squamous cell carcinoma and a lymphosarcoma.

Fibromas were detected in 3 buffaloes representing 4.6% of the total neoplastic cases. The tumor appeared as a hard solitary, painless movable swelling of 5-6 cm in diameter with skin covering, located in the ventral aspect of the tail base (Fig. 1) and at the base of the ear (Fig. 2). A fibromatous epulis was detected in the last buffalo which was admitted with sever bloody salivation at the mouth commissure (Fig. 3A). Gross examination of the mouth revealed solitary,

sessile, smooth and firm pink mass of about 3-5cm in diameter located at the labial surface of the dental pad (Fig. 3B). Surgical excision was curative (Figs. 4A&B). Microscopically, interlacing bundles of elongated fibroblasts forming whorl's appearance was noticed (Fig.4C). Good recovery was obtained within 15-20 days without recurrence.

Table (1) : Type, breed, number and percentage of neoplasms among the presented cases

Type of neoplasm	cows	bulls	ewe	buffaloes	Total No.	%
Fibroma	—	—	—	2	2	3.1
Fibromatous epulis	—	—	—	1	1	1.5
Fibroadenoma	—	—	—	1	1	1.5
Fibropapillomas	1	3	—	—	4	6.2
Cutaneous papillomas	10	12	—	3	25	38.5
Keratoacanthomas	—	—	8	—	8	12.3
Fibrosarcomas	1	1	—	—	2	3.1
Squamous cell carcinoma	17	—	2	2	21	32.3
Lymphosarcoma	1	—	—	—	1	1.5
Total No.	30	16	10	9	65	100

Fibroadenoma was diagnosed in 11 months old buffalo heifer. The history informed gradually enlarged swelling of orange size in the caudal rear quarter. The skin still intact while the mass was single circumscribed and soft in texture (Fig.5). After surgical removal, the tumor was large and about 6-8 cm in diameter and the cut surface of the excised mass was solid grayish white and bulging with a whorl-like pattern and slit like space (Fig.6e&f). Microscopically, a slightly hypercellular stroma made up of loose connective tissue rich in acid mucopolysaccharides were noticed. Elastic tissue was absent. The tubules were composed of cuboidal or columnar cells with round uniform nuclei resting on a myoepithelial cell layer ( Fig. 6g ).

Fibropapilloma was met with in 4 animals ( a heifer &3 bulls). The first lesion was orange size, sessile, nodular, firm in texture and rosy red in colour occluding the vaginal vestibule and made the vulval lips elevated apart (Fig.7a). The mass was debulked surgically( Figs. 7 b & 8c). Complete healing of the vaginal mucous membrane was obtained within 15 days without distortion of the vulval lips. Follow up the case during a period of 6 months revealed no recurrence (Fig.8d).

The second and third lesions were located in the free end of the penis of young Holstein and mixed breed bulls (1-2 years). The history revealed a slight hemorrhage from the preputial cavity and blood clinging to the preputial hair following coitus. The tumour was fungoid (3-4 cm in diameter) located at the junction of the glans penis and sheath and the craniodorsal part of the penis. The mass attached by a small base allowing of the tumour to protrude from the preputial orifice during erection. Correction was simple where tranquillization was calm the bull and facilitate the extension of the penis (Figs.9, 10, 11&12). The last lesion of fibropapilloma was located rostrally and ventrally to the medial canthus of the left eye about 10 cm caudal to the nostril of one year old bull. The lesion was circumscribed of large lemon size and freely movable with intact skin. Surgical excision was curative. (Figs.13 &14A). Microscopically, papillary projections of epithelium resting on collagen core and fascicles of fibroblast were determined (Fig.14B). No recurrence was detected after the surgical interference.

Cutaneous papillomas were recorded in both cattle (2) cases) and buffaloes (4 cases) representing 38.5 % of the total neoplastic cases and about of 95% of cases were under two years of age. The recorded lesions were grayish in colour, dry, firm keratinized of about 3-6cm in diameter and oozed moderate blood on biopsies. They were single or multiple and cauliflower or fungoid in configuration with very short and broad base. Large papillomas showed hemorrhage due to repeated trauma. They located at the head, neck, shoulder, brisket, teats and inguinal region in a bull (Fig.15A&B). In buffalo heifers, most growths were noticed in the limbs. They were single, firm, dry, sessile and villous shaped masses of 1-2cm in diameter (Fig.15C). Surgical excision was curative for large masses (Fig.16). While sporadic sessile nodule was enucleated by using curved artery forceps followed by application of keratolytic solution (Collomak, October Pharma, S.A.E, Egypt.) with satisfactory results. Microscopically, the lesion consists of a central branching dermis-like core of connective tissue. The epidermis was severely affected showing extreme degree of hyperkeratosis and acanthosis (Fig.17A). Follow up of the cases revealed no recurrence (Fig.17B).

Intracutaneous cornifying epitheliomas (Keratoacanthomas) were recorded in 8 sheep of 3-4 years old. The gross examination revealed single or multiple circumscribed, ulcerated sessile nodules of 3-5 cm in diameter and covered with scabs. Removal of keratinized tissue revealed a bleeding surface. The masses were grayish in colour and soft in texture with unpleasant odour. They occurred ventral to the sternum, bilaterally in front of the fold of the stifle joints (Figs.18&19) and in the ventral aspect of the fatty tails (Figs.20&21A&B). Surgical excision was curative. Microscopically, the tumour showed invaginated cyst with wall composed of whorls and outward projections of stratified squamous epithelium and surrounded by dilated capillaries and numerous inflammatory cells. Keratinized center could be seen (Fig. 21C). No signs of

recurrence were noticed.

Fibrosarcomas were diagnosed in a mixed breed bull and cow. The neoplastic masses were sessile, hard, lobular, ulcerated, fleshy in texture, red in colour easily to be bled and poorly circumscribed encompassing most of the lateral aspect of the neck and shoulders region (Fig. 22A&B). Microscopically, the neoplasm consists of whorls and interlacing bundles of fibroblasts and collagen. The nuclei were vesicular and hyperchromatic (Fig. 22C). Recurrence of the neoplasm was observed in the cow after surgical excision by 3 months. At that point, due to financial consideration, the owner was opted for animal slaughtering.

Squamous cell carcinoma was diagnosed in 21 animals (2 sheep, 2 buffaloes and 17 cows) representing 26.7 % of the total neoplastic cases. In sheep, the first lesion was located as ulcerative overgrowth in the hypogastric region. The neoplastic mass was covered with a thick scab, the removal of which showed rough velvety bleeding surface (Fig. 23). The second lesion was detected at the frontal-perial area of 5 years old sheep. The neoplasm showed severe local invasiveness to the supraorbital region and nasal cavity with unilateral purulent bloody nasal discharge. The animal showed great-disturbed health condition and sever enlargement of the prescapular lymph node. The owner was advised to discard the animal. Microscopically, cell nests in all distinct stroma were identified (Fig. 24).

Two buffaloes were admitted with ulcerating swelling of about 6-8 cm in diameter in their breast. The reported history was failure of repeated treatment of usual wound dressing while the lesion continue to increase in size. Surgical excision was performed (Figs. 25 & 26). Microscopically the neoplasm was squamous cell carcinoma. Recurrence was noticed only in a buffalo and a sheep 2 months after treatment while recovery was obtained after the second surgical excision.

The ocular lesions of SCC were elevated bean shaped overgrowths invaded the third eyelid (8 cases), corneoscleral junction, bulbar and palpebral conjunctivae (4 cows). All the affected animals were female and aged 5-8 years. The overgrowths were pink, irregular in shape, nodular, ulcerated and easily to be bled. The eyeball of the affected eye was very small in size in comparison to the other eye. The associated signs were conjunctivitis, blepharospasm, keratitis and corneal opacity. Destruction of the eyeball was found in addition to invasion of various periorbital structures in 5 cows leading to growth of large, unsightly foul smelling tumour. The parotid lymph node was involved. The affected cows continued to eat and produce milk reasonably well but tends to lose its weight (Figs. 27,28,29,30&31).

Treatment of OSCC in early stages either by third eyelid resection or extirpation of the involved eye was resulted in recovery without recurrence, while surgical interference was inadvisable in the cases showed severe destruction of the eyeball and the surrounding periorbital tissues

and involvement of the surrounding lymph node. Microscopically, the tumour showed multiple cell nests, cord and islands of squamous cells, keratin pearls, intercellular bridges and basement membrane disrupted (Fig.31B).

Lymphosarcoma appeared in 10 month old heifer. The history informed slow growing subcutaneous swelling covering the shoulder joint and the cranio-lateral aspect of the scapula (Figs.32A), the pre-scapular lymph node was involved. Incisional biopsy denoted microscopically lymphosarcoma. The neoplasm consists of mixed cell types which may be lymphocytic, polymorphocytic, lymphoplasmic and histiocytic (Fig.32B). Because of the deteriorated general health condition of the animal, the owner was advised to discard the animal.



**Fig. (1) :** Fibroma at the ventral aspect of the tail in 6 years-old buffalo(c) ,during its surgical excision (D) and after closure of the skin incision (E).



Fig. (2) : Fibroma at the base of the ear  
in 7 years-old buffalo (a) and  
the excised mass (b).

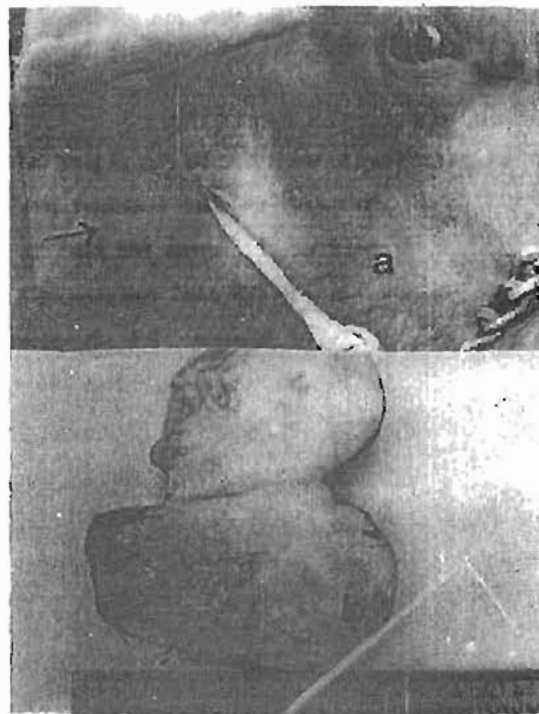
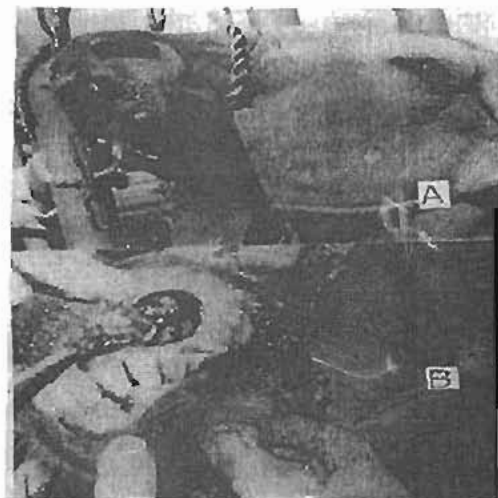
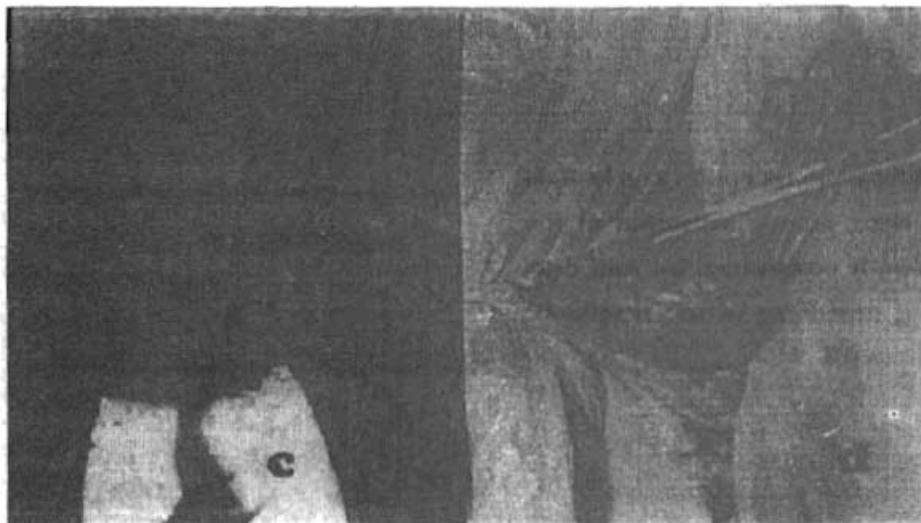


Fig. (3) : Fibromatous epulis in a buffalo  
: Note, bloody salivation at the  
mouth commissure (A) and dur-  
ing debulking of the neoplastic  
mass (B).



**Fig. (4) :** The same case in fig. 3 just after removal of the tumour and closure of the gum (A).The excised mass (B) and microscopic picture of fibroma (c) showing bundles of elongated fibroblast forming whorl's appearance (H&E.x100).



**Fig. (5) :** Fibroadenoma at the left rear quarter of 11 month old buffalo heifer (C) and during its careful blunt dissection(D).

Fig. (6) : The same case in fig.5 after debulking the tumor and closure of the skin incision (e) and cut section of the excised mass was solid greyish white and bulging with a whorl-like pattern and slit like space(f) and fibroadenoma showing microscopically, a slightly hypercellular stroma made up of loose connective tissue rich in acid mucopolysaccharide. The tubules were composed of cuboidal cells with round uniform nuclei resting on a myoepithelial cell layer (g).

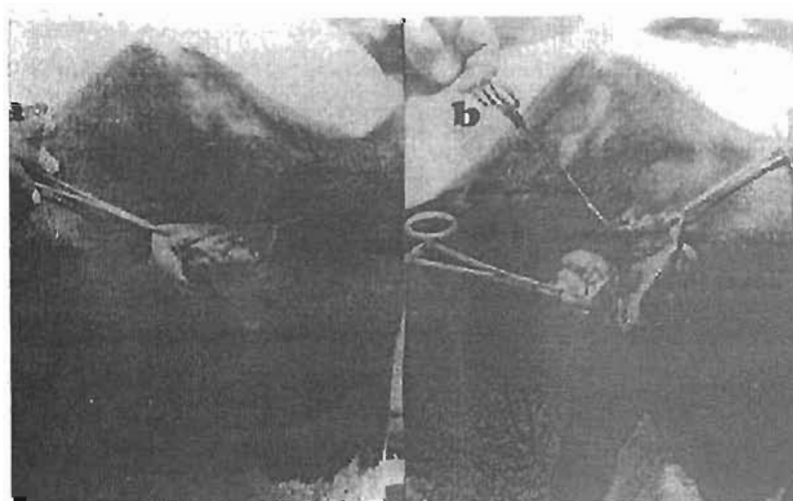


Fig.(7): Vaginal fibropapilloma in a heifer (a) and during its careful blunt dissection (b).



**Fig.(8):** The same case in fig. 7 just after closure of the incision to the level of the mucous membrane (c) and after 4 months showing complete healing without recurrence (d).



**Fig. (9) :** Fibropapilloma of the penis of young Holstein bull after tranquilization and exposure of the penile mass (A&B).

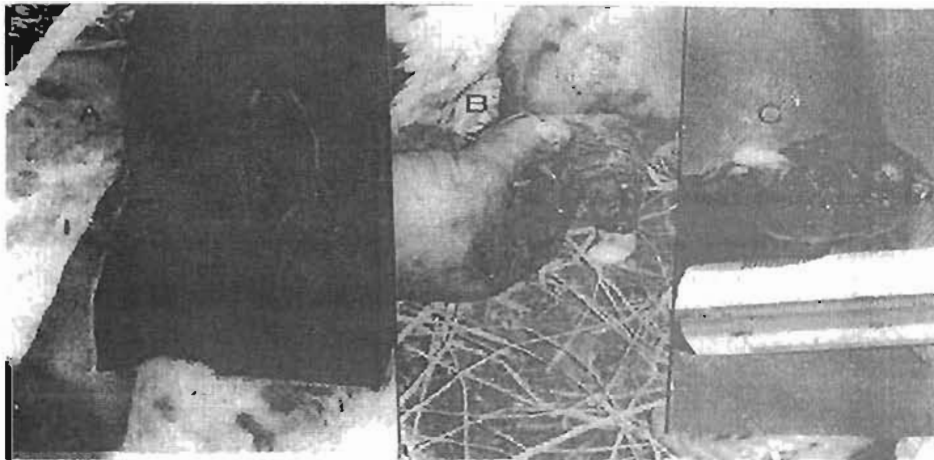


Fig. (10) : The same case In Fig.9 after surgical excision of the tumour (A&B) and the removed mass (C).

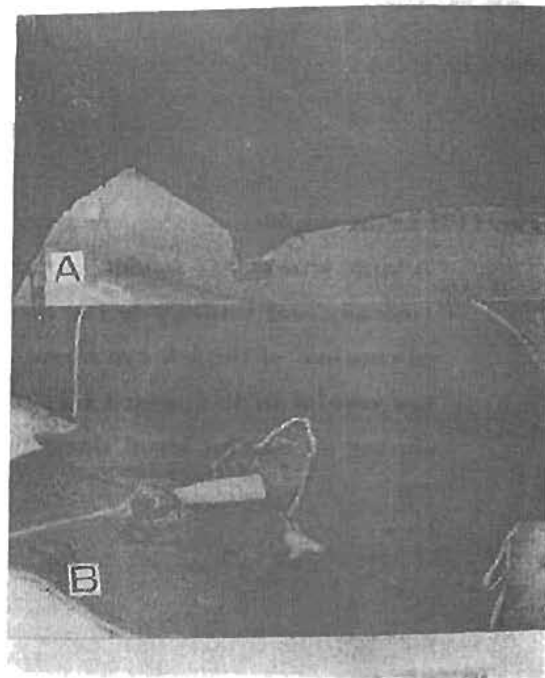
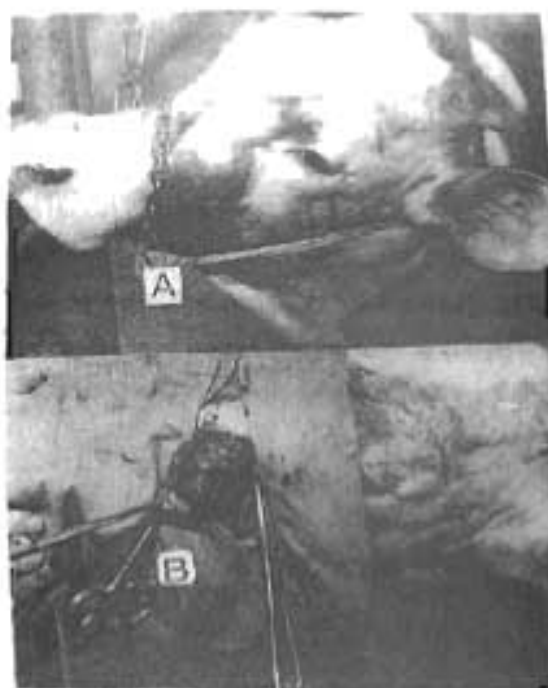


Fig. (11) : Fibropapilloma of the penis In young mixed breed bull after exposure of the penile mass (A&B).

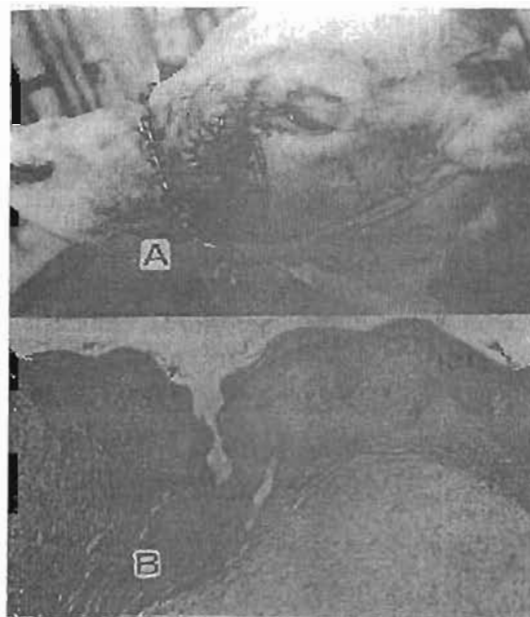
**Fig. (12) :** The same case in fig.11 after surgical excision of the tumour and the excised mass (B).



**Fig. (13) :** Fibropapilloma in a young bull : A large lemon size swelling located rostrally and ventrally to the medial canthus of the left eye about 10 cm caudal to the nostril (A) and during its careful blunt dissection (B) .



**Fig. (14) :** The same case in fig. 13 after closure of the skin incision(A) and the microscopic picture of fibropapilloma (B) showing proliferation of dermal fibroblasts covered by pre-plastic epithelial pegs (H&E.x100).



**Fig. (15) :** Cutaneous papillomas distributed at the lateral aspect of the neck and shoulders of heifer (A), at the inguinal region of young bull (B) and the legs of the buffalo heifer (c).



Fig. (16) : Cutaneous papillomas at the ventrolateral aspect of the neck dewlap of young bull (A) and the removed masses (B).

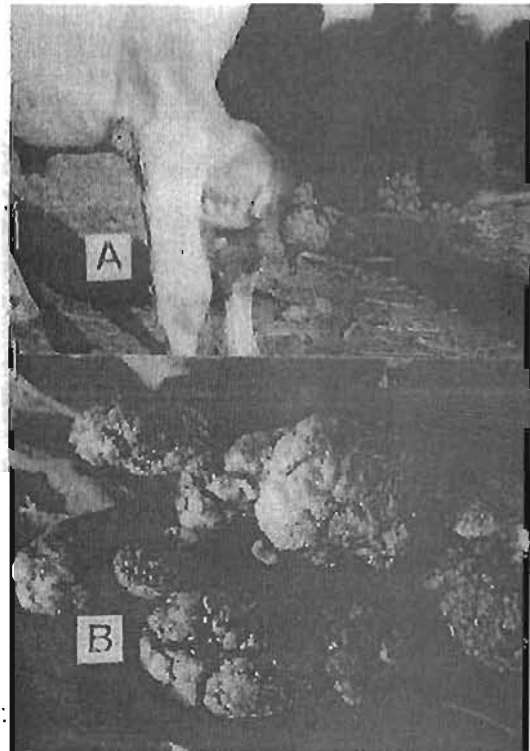
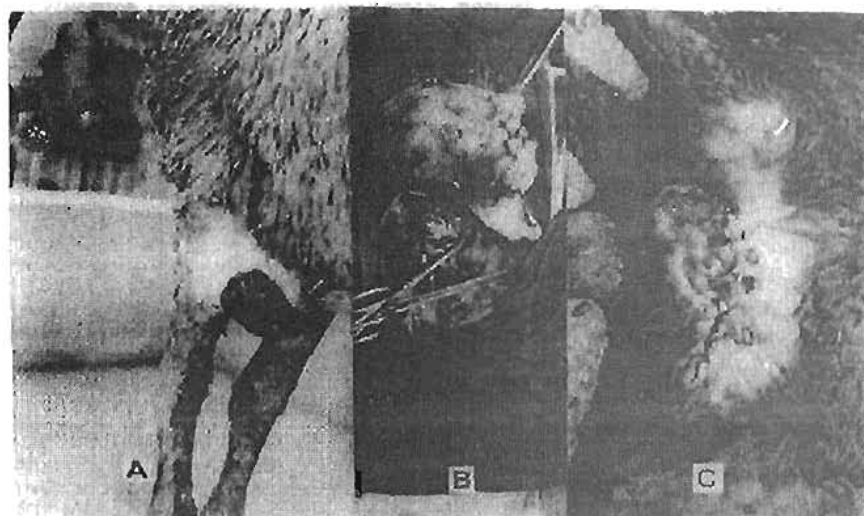


Fig. (17) : Cutaneous papilloma showing papillary projection of epithelium resting in collagen core. epithelium thickened by hyperkeratosis and acanthosis (A) and the same case in fig. 16 showing complete healing without recurrence (B).



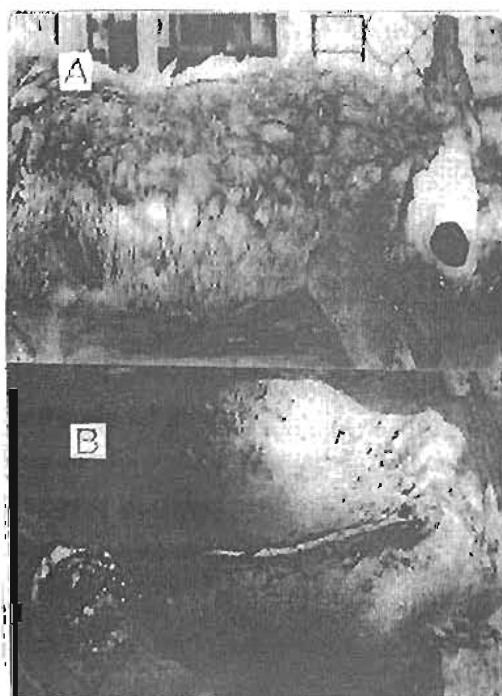




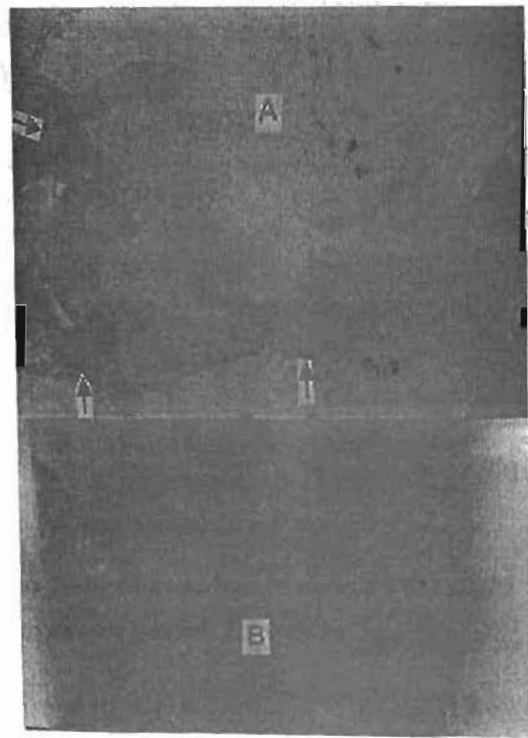
**Fig. (10) :** Keratoacanthoma located ventral to the sternum at the level of the xyphoid cartilage of ewe (A), during its surgical dissection(B) and just post-operation (c).

**Fig. (10) :** Keratoacanthomas in ewe.

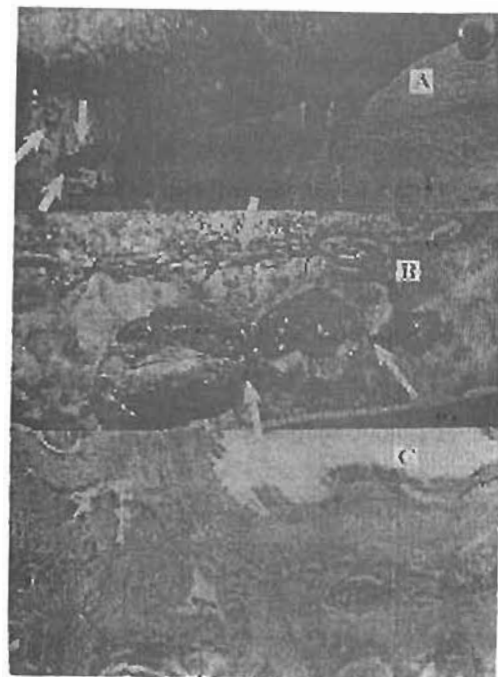
Three masses located at the ventro-lateral aspect of abdomen anterior to the fold of the stifle joints and ventral to the sternum at the level of the xyphoid cartilage (A) and the excised masses (B).



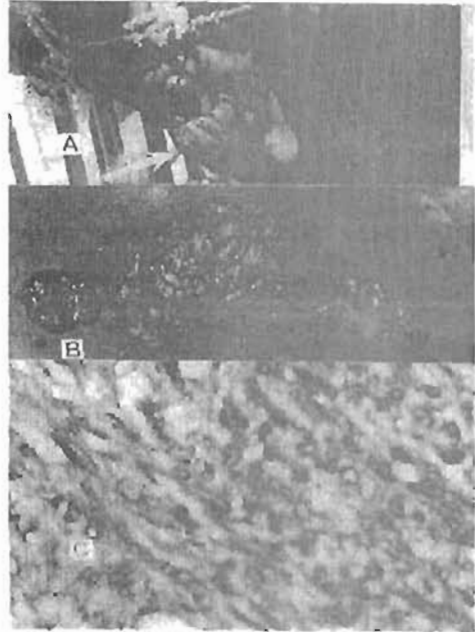
**Fig. (20) :** Keratoacanthoma at the ventral aspect of the fatty tail in ewe (A) and just post oprallon and the excised mass (B).



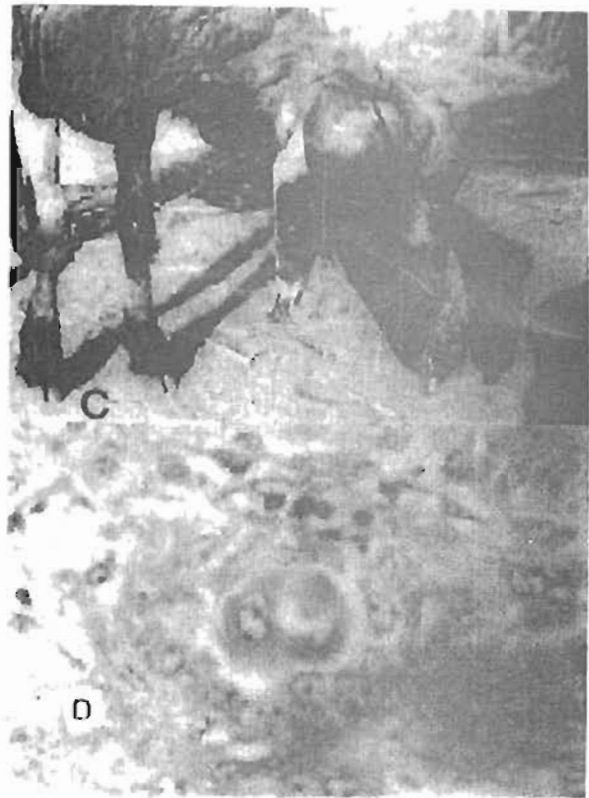
**Fig. (21) :** Keratoacanthomas at the ventral aspect of the fatty tail in ewe (A), the excised masses (B) and its microscopic picture (c) showing invaginated cyst with wall comprised of whorls and outward projections of stratified squamous epithellum (H&E.x100).



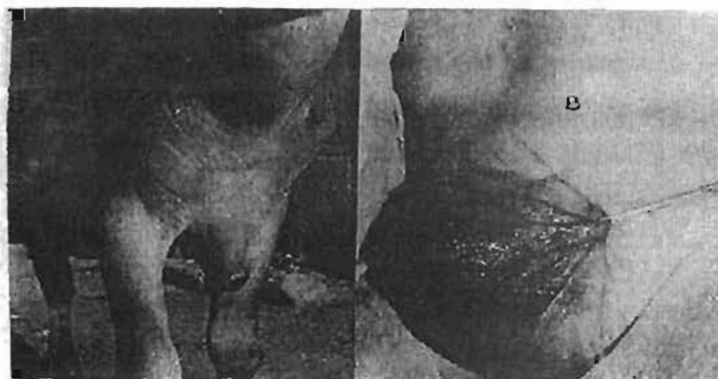
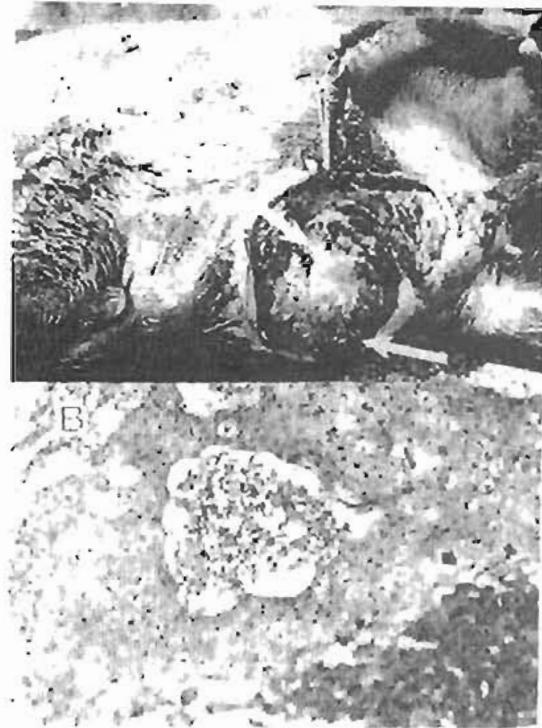
**Fig. (22)** : Fibrosarcoma at the ventrolateral aspect of the neck of young bull (A), the excised masses (B) and its histopathological findings(C) showing whorl's and interlacing bundles of fibroblasts and collagen. The nuclei were vesicular and hyperchromatic (H&E.x150).



**Fig. (23)** : SCC at the ventral aspect of the abdomen just in front of the udder of ewe(A) and its histopathological findings(B) showing cell nests in ill distinct stroma (H&E.x150).



**Fig. (24)** : SCC at the frontal-parietal area extending to supraorbital region with unilateral purulent (bloody nasal) discharge (c) and microscopical picture of SCC (D) showing cell nest with keratin in the center surrounded with malignant cells (H&E.x150).



**Fig. (25)** : SCC of the breast of 8 years old buffalo (A & B).

Fig. (26) : The same case in fig.25 just postoperation (A) and the excised mass (B).

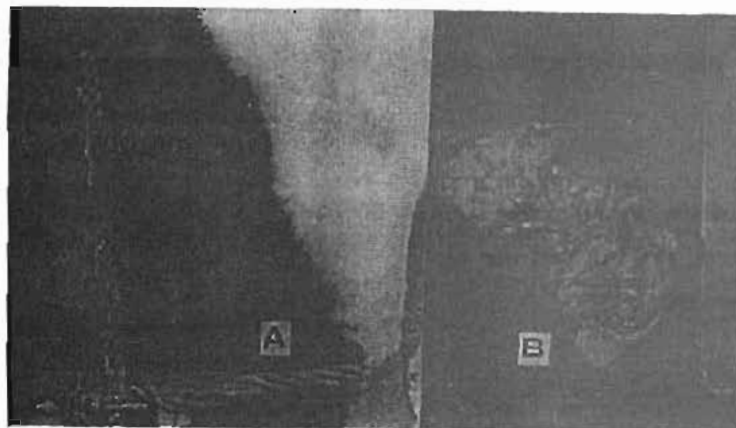
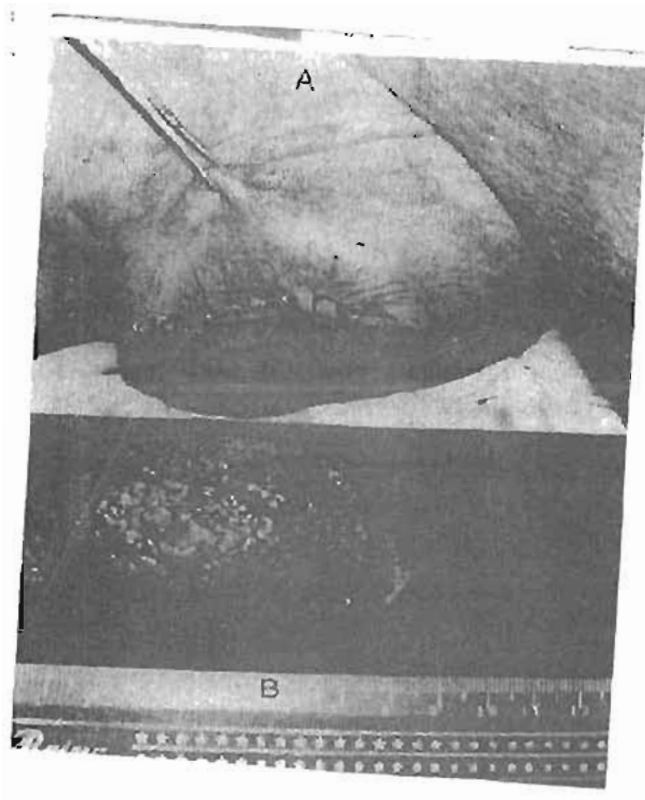
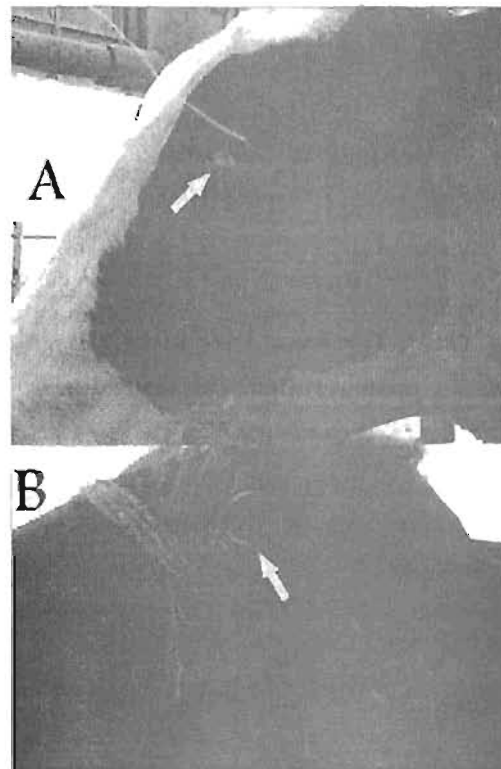
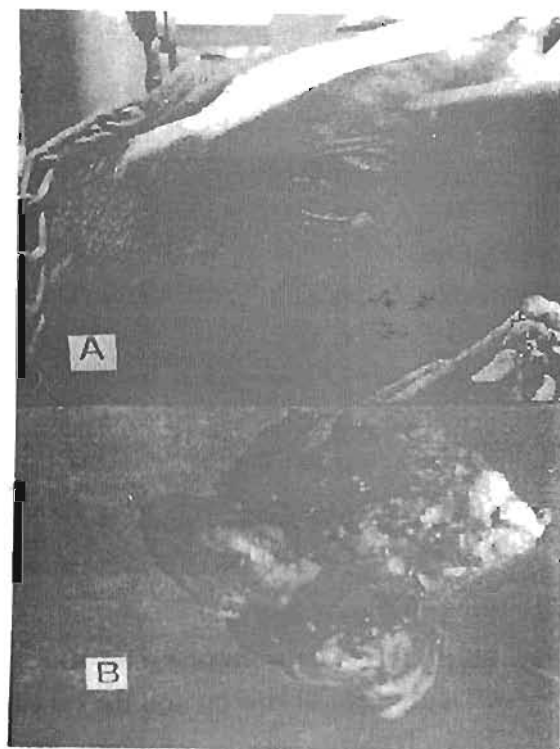


Fig. (27) : SCC of the third eyelid showing (irregular nodular, easily damaged mass in a mixed breed cow (A) and the excised irregular mass (B).

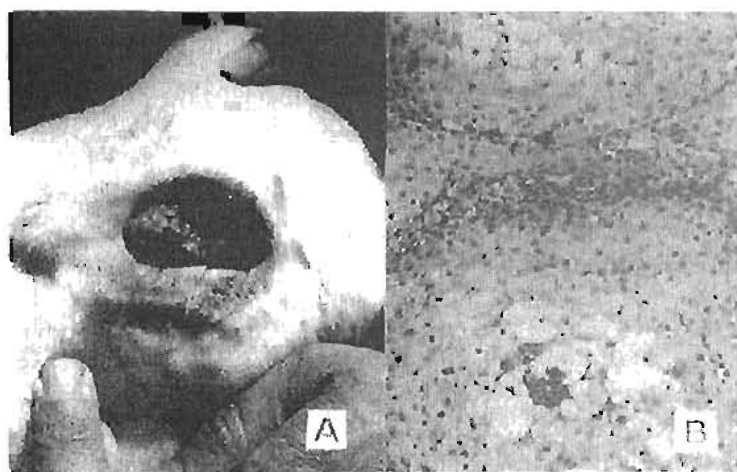
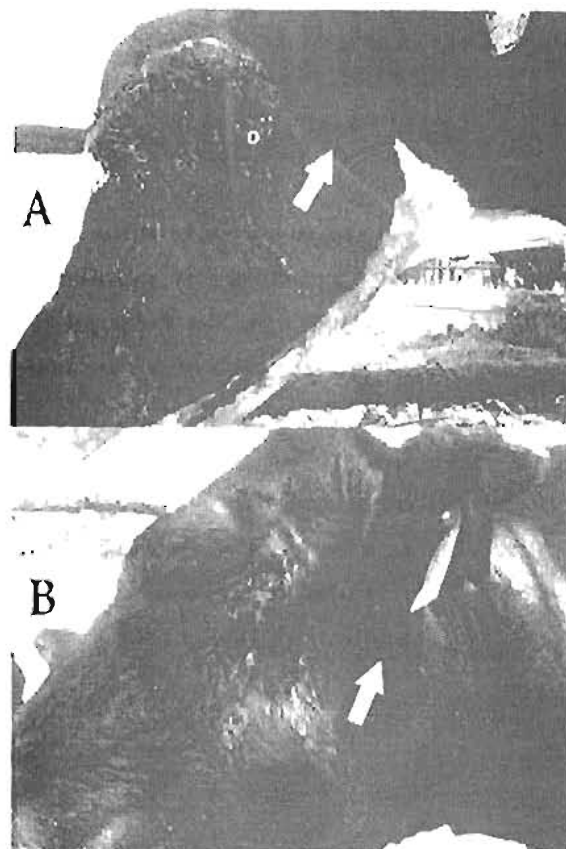
**Fig. (28)** : SCC of the third eyelid in a Holstein cow (A) and typical cancer of the bulbar and palpebral conjunctivae (B).



**Fig. (29)** : SCC of the third eyelid in a mixed breed cow(A) and the excised mass (B).



**Fig. (30) :** Highly invasive ocular SCC of Holstein cows with involvement of the parotid lymph nodes (A&B) .



**Fig. (31) :** A typical cancer of the third eyelid showing a pink fleshy ulcerated growth of 7 years Holstein cow (A) and its microscopic picture(B) showing cord and islands of squamous cells ,keratin pearls, intercellular bridges and basement membrane disrupted (H&E,x150).

**Fig. (32) :** Lymphosarcoma at the shoulder region of 10 months old heifer(A) note the enlarged pre-scapular lymph node and histopathological finding (B) consisting of the tumour cells were large oval, ovoid or rounded hyperchromatic with intercellular reticulin with eosinophilic cell infiltration (H&E,x130).



## DISCUSSION

In the present study, 60 ruminants of different species and ages had neoplasms in different locations of the animal body. The cases were examined, diagnosed, treated and followed up, explaining the clinical point of view dealing with some forms of neoplasms in ruminants. The low number of these cases recorded in buffaloes agreed with that recorded by Moustafa et al. (1989) and Kharole et al. (1995).

All ages were found to be involved. It was noticed that cutaneous papilloma, fibroadenoma of the udder were seen in young animals under 2 years while SCC was of high frequency in old age (5-8 years). These findings were similar to that recorded by Ahmed et al. (2000); Fouad et al. (2001) and Movassaghi & Bagheri (2002).

According to the greatly reduced number of males in cattle breeding in comparison with number of female, the neoplasms associated with older cattle as OSCC would be larger in female. This was in consistent with the findings of Ahmed et al. (2000) and Movassaghi & Bagheri (2002). In contradistinction, neoplasms of younger animals as virus-induced papillomas should have more nearly equal sex distribution.



Surgical excision of these tumours could be considered the radical method used than other inavailable different modalities of treatment because it was economic, faster and mostly curative when the animal health condition accepted the risk surgical interference. A result which was endorsed by **Robert (1984) Misk et al. (1984) and Behery et al. (2001)**. Excellent outcome was obtained from the treatment of papillomas, keratoacanthomas, fibroadenoma, fibroma and fibropapilloma. This may be due to effectiveness of surgical treatment and acceptable character of tumour for treatment. These tumours were also treated successfully by **Misk et al (1984); Abd El-Aal et al. (1992); and Behery et al. (2001)**. Also cure of SCC of the third eyelid supported its surgical treatment before local invasion.

Cure of the cases of SCC after the first treatment and the other cases after the second treatment could be attributed to invasive character and some local recurrence of this type of neoplasm. These facts agreed with that reported by **Misk et al. (1984); Ramadan et al., (1991) and Daniel & McLaughlin (1992)** who concluded that wide surgical excision is the technique of choice for management especially in large lesions.

A fibromatous epulis was detected in a buffalo of three years old. The mass was solitary, sessile, firm and pink in color involving the labial surface of the dental pad. Removal of epulis was performed through maximal opening of the oral cavity by a mouth gag. The same technique was described by **Abd El-Aal et al. (1992) and Kandeel & Abd El-Aal (1997)** Moreover, surgical excision was not followed by recurrence.

Cutaneous papillomatosis: This name is most frequently used to specify the virus induced papilloma. Cattle were found to be more affected than other domestic animal species especially among young animals under two years and its features were similar to the findings recorded by **Kassem (1980); Karram (1985); Samy & Kadri (1986); and Dawlat et al. (1997)**. The recorded lesions were scattered all over the body (especially head, neck, dewlap, teats and limbs) possibly owing to closer contact with other animals. This explanation coincides with that of **Abu-Samra et al. (1982); Dawlat et al. (1997); Abu-Selda (1998) and Fouad et al. (2001)**.

Fibroadenoma is a common benign tumour of the mammary gland. It is usually single but in 20 percent of cases, there are multiple lesions. It is relatively common in dogs and cats (**Hayes & Mooney, 1985 and Alenza et al., 2000**). It is of interest to record a fibroadenoma in a buffalo heifer involving the caudal rear quarter. The mass was soft, sharply demarcated of orange size with freely covering skin. Similar cases were described in heifer by **Thibault et al. (1997)** and in dogs and cats by **Behery (2002)**.

Most neoplasms recorded in sheep were cutaneous while those of mucus membrane was not recorded. Similar result was observed by **Angus & Head (1983) and El-Seddawy & Abd El-Aal**

(1996). The high incidence of neoplasm recorded in female being explained by the greater number of female at risk and probably because they are usually slaughtered at a younger age less than two years before development of the neoplasm. The same attribution was reported by **Ramadan et al (1991)** and **El-Seddawy and Abd El-Aal (1996)**.

As regards to cutaneous neoplasms in sheep, keratoacanthoma was the most common type and affected sheep less than 3 years old. It was recorded mainly in the ventral of the fatty tail and the right side of the ventro-lateral abdominal wall in the fold just in front of the stifle joints. These results were in agreement with **El-Seddawy and Abd El-Aal (1996)**. However a survey carried out in all ovine neoplasm by **Bastianello (1982)** revealed that 80% of cutaneous neoplasm were squamous cell carcinoma which varied from well differentiated to anaplastic.

Cutaneous SCC was reported less frequently and lesser in number in sheep than in cattle. It was seen in the hypogastric region and at the frontal-parietal area in ewe with white coat. Furthermore, it is suggested that solar radiation was a contributing factor in the etiology of the tumour. **Blobol et al. (1981)**; **Ramadan et al (1991)**; **Behery, (1992)**; **Mendez et al. (1997)** and **Fouad et al., (2001)** observed similar findings.

Fibropapilloma, this genital wart caused by bovine papilloma virus and is the counter part of the penile lesion in bull (**Olson, 1963**). It was diagnosed as irregular single mass of an orange size occluding the vaginal vestibule of a heifer. The ulcerated surface of the lesion could be attributed to the continuous contact and friction with the tail. Surgical excision revealed great success without distortion of the vulval lable and without recurrence. These observations agreed with that recorded by **Stedham (1984)** and **Behery (1992)**.

Penile fibropapillomatosis was recorded mainly in young bull involving the free portion of the penis. Ulceration and hemorrhage were frequently noticed. Their presence was seriously impede copulation because of the pain and mechanical interference. Nearly similar findings were reported by **Walker & Vaughan (1980)**. The recorded sites were junction of the glans penis and sheath and the carnifodorsal part of the penis, which was prone to trauma. Correction of penile fibropapilloma was simple tranquillization was essential to calm the bull and facilitate extension of the penis as described by **Walker & Vaughan (1980)** and **Misk et al. (1990)**. Regardless of the size of the fibropapilloma, the attachment of the penis was usually small. The microscopic features of this tumour were characteristic and follow up information indicated that the masses had not recurred. These results were endorsed by **Schulman et al. (2001)**.

Fibrosarcoma occurs rarely in ruminants. The exact cause is not known, however retroviruses are considered to be the main causal agent. Fibrosarcoma was diagnosed in two cases as firm multiple subcutaneous resilient and ulcerated masses located at the shoulder and neck regions.

Surgical excision showed some recurrence. Similar observations were reported by **Kharole et al. (1996)** and **Sastry (2002)** who said that fibrosarcomas are infiltrative and often recur but metastasis occurs uncommonly.

Cattle afflicted with OSCC represented a management challenge from both an economic and animal care standpoint. Failure to deal with cows with OSCC in a timely manner could be resulted in economic losses to the owner because the cows were condemned if there is extensive infection or the animal was in poor condition or if there is evidence of cancer spreading to the surrounding lymph node. The recorded cases of OSCC were adult cattle with peak incidence had been reported at 5-8 years. The same was recorded by **Kharole et al. (1996)** and **Ahmed et al (2000)** who mentioned that the tumour occurs in all age group, however frequency increase with advanced age to certain limit.

OSCC or cancer eye can develop on different part of the eye with differing frequencies. In contrary to our results, the most common site recorded (65%) by **Balley et al (1990)** and **Weaver et al (2005)** is the limbus (corneoscleral junction), the remaining 35% occur on eyelids (including third eyelid particularly at the angle closest to the nose). In the present study, the third eyelids appeared to be the common site of cancer eye in dairy cows (66%). The remaining 34% of the lesions were found equally distributed in the bulbar and palpebral conjunctivae and cornea. These results were in agreement with **Movassaghi & Bagheri (2002)**.

Four stages of development of OSCC have been described by **Daniel & McLaughlin (1992)**. These include plaques; Keraoma or Keratoacanthomas, papilloma carcinomas. The latter begin as a non-invasive and finally invasive. Although the present study showed no great differences in the incidence of OSCC between native and foreign breeds. However OSCC involved the globe of the eye usually presented in the late stage, invasive and metastasize to parotid lymph node was mainly recorded in the native breed. This could be due to failure to identify the early lesion leading to growth of large, unsightly foul smelling tumour. Blindness in the affected eye will soon follow. Nearly similar findings were also reported by **Ahmed et al. (2000)**.

It was noticed that the lesion of OSCC was proliferative irregular masses which ulcerate through the skin to cause moderate distress and blepharospasm. The eyeball of the involved eye was very small in comparison to the other eye. This could be attributed to pressure of the growing neoplasm on it. Keratitis and conjunctivitis may be also due to irritation and pressure of the neoplasm on them. Similar findings were reported by **Kharole et al. (1996)** and **Ahmed et al. (2000)**.

Despite that there is no difference between male and female in susceptibility to cutaneous papillomatosis it was found that OSCC affected female only. This was partially explained by the

greater number of dairy cows at risk in comparison with males which had been sent to be slaughtered before the age of peak incidence. This assumption was in agreement with that of **Behery (1992); Ahmed et al. (2000) and Movassaghi & Bagheri (2002)** .

It was found that a significant excess of OSCC were noticed in white faced cattle. Similar observation was recorded by **Anderson & Badzioch (1991) and Ahmed et al. (2000)** who mentioned that you can reduce of cancer eye in your herd by selecting breeding stock with dark pigmentation or colour around the eye and by culling the affected animal and their offspring from the breeding herd.

The results of the present study revealed that surgical treatment of OSCC was possible, particularly in the early stages. The lesion was removed surgically from the eyelid or by removal of the whole eye. While delayed interference or cows with advanced lesion that had extensive infection, animal in poor condition or invasion of the local tissue around the eye with involvement of the lymph node should be destroyed. These results were in agreement with that of **Robert (1984) and Daniel & McLaughlin(1992)** who advised routinely check cattle over the age of three years for any lesions in or around the eyes.

Lymphosarcoma was diagnosed only in one case. Although the neoplastic involvement of the skin and superficial lymph node would be particularly accessible to surgical excision; it was inadvisable in the present case. A result which was endorsed by **Moulton & Daugworth (1978) and Stedham (1984)** who mentioned that it is doubtful if removal would alter the course of the disease. The major value of surgery would be obtain tissue specimens by which to render a definitive diagnosis.

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## الملخص العربى

## المعاملة الجراحية لبعض الأورام السرطانية ونسبة حدوثها فى المجترات

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أجريت هذه الدراسة من أجل الفاء الضوء، على أهم الأورام السرطانية الشائعة فى المجترات بمحافظة الدقهلية مسجلاً أهم هذه الأنواع، توصيفها، أماكن حدوثها مع توضيح الأنواع منها القابلة للمعالجة جراحياً.

وعلى هذا فقد تم تشخيص ٦٥ حالة من الأورام الحميدة والخبيثة فى المجترات من خلال الحيوانات التى تم فحصها بمختلف الأماكن فى محافظة الدقهلية وذلك من خلال القوافل البيطرية التعليمية أو فى بعض المزارع الخاصة بالمحافظة بجانب الحيوانات التى رددت إلى قسم الجراحة بالمستشفى البيطرى التعليمى لكلية الطب البيطرى - جامعة المنصورة.

تم تحديد النوع، السلالة، السن والجنس وعلاقتها بهذة الأورام وكذلك أماكن إنتشار هذه الأورام على جسم الحيوان كل على حده. هذا وقد تم عمل فحوصات إكلينيكية لهذة الأورام بالإضافة إلى فحص الغدد الليمفاوية المجاورة. كذلك تم عمل فحص نسيجى لهذة الأورام وتم تصنيفها كالتى : ٣ ورم ليفى، ورم غدى ليفى ثديى، ٨ حالات لورم الشكوم القرنى، ٢٥ ورم حليمى، ٢ ورم ليفى خبيث، ٢١ حالة لسرطان الجلد الصدفى (ورم شوكى خبيث)، ورم ليمفاوى. هذا وقد تم التعامل جراحياً مع الحالات التى نسترجب الاستئصال الجراحى المعتاد حيث تم إجراؤه بطرق مختلفة حسب أماكن وجود هذه الأورام ولم يتم التدخل الجراحى لعدد ٦ حالات تعانى من ورم شوكى خبيث منتشر إلى الأنسجة المجاورة والغدد الليمفاوية المحيطة، وذلك فى عدد ٥ بقرات ونعجة وكذلك فى حالة الورم الليمفاوى الخبيث.

وبالمتابعة لم يلاحظ ظهور الأورام المتأصلة مرة أخرى حيث حدث شفاء تام من هذه الأورام ولم يسجل إرتجاع لآى من هذه الأورام إلا فى ثلاث حالات أحدهما كانت تعانى من ورم ليفى خبيث والأخرتين كانت تعانى من ورم الخلية الحرشفى الخبيث.

كذلك أثبتت هذه الدراسة أن الأورام الحميدة كانت أكثر شيوعاً (٦٣١) من الأورام الخبيثة (٣٦٩) وقد لوحظ إنتشار هذه الأورام فى جميع الأعمار المختلفة ولكن معظم الأورام الحميدة كانت أكثر شيوعاً فى الأعمار الصغيرة أقل من سنتين حيث تم تسجيلها فى كل من الذكور والإناث بينما وجد أن الأورام الخبيثة تصيب الأعمار الكبيرة ولم تسجل إلا فى الإناث فقط.