



## Case Report - Superficial Malignant Peripheral Nerve Sheath Tumour in a Dog

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### Abstract

A 10yr old white coloured Labrador breed male dog presented with a bleeding mass of 6x5x5 cm in the peri-anal region. The excised tumour exhibited histological features of a malignant peripheral nerve sheath tumour.

**Keywords:** MPNS, Peripheral MPNST, Soft tissue tumour in dog.

### Introduction

Soft tissue tumour of both benign and malignant types can occur in breed dogs. A pet male, 10 year old white Labrador had an ulcerated bleeding mass in the peri-anal region which was excised in toto. The histology revealed a superficial malignant peripheral nerve sheath tumour.

### Case Presentation

The 10 year old male white coloured Labrador was a pet animal of a Faculty member in the University. He had episodes of bleeding in the perianal region. On examination- an ulcerated mass of 6x5x5 cm was noticed. The skin over the mass was partially ulcerated and the rest of the skin over the mass was well stretched with a blue/black hue. On general anaesthesia, the mass was excised in toto and submitted for histopathological

examination. The dog was a single canine in the house and was otherwise healthy and active.

### Clinical Picture

#### Figure 1



**Figure 2**



Fig 1, 2: Perianal region where there is a vaguely circumscribed lobular mass without covering hair & is partially ulcerated.

**Macroscopy**

**Figure-3:**



**Figure-4**



Fig 3, 4: Soft tissue mass of 6x5x5 cm, partially covered with skin and fur.

**Figure-5**



Fig 5: solid tumorous mass with hemorrhagic areas.

**Microscopy**

Sections studied show skin from perianal region identified by the prevalence of apocrine glands and hyperpigmented skin. There is a cellular tumor occupying the entire dermal region identified. Tumor is vaguely circumscribed [fig 12]. Cells are arranged in sheets, nodules, cords and nests and are traversed by fibrocollagenous tissue [fig 12]. Areas of hyalinization identified. The evidence of origin from thick nerve bundle can be traced [fig 19]. The cells are deceptively benign with abundant granular cytoplasm and prominent nuclei [fig 18]. The cells are arranged in a trabecular pattern [fig 12]. However there are focal pleomorphism and considerable degree of anaplasia. Vascular invasion and embolisation are observed [fig 21]. Several vessels have thickened and hyalinized wall. [fig 15]. Squamous metaplasia is seen at places [fig 18]. Histological features are consistent with the diagnosis of superficial epithelioid type of malignant peripher nerve sheath tumour.

Figure 6: 4x



Figure 9: 1x

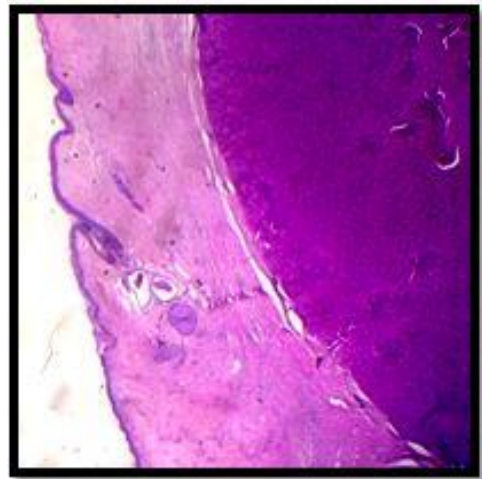


Figure 7: 10x

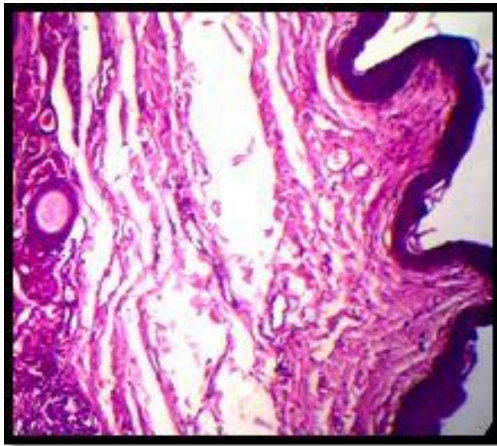


Figure 10: 4X

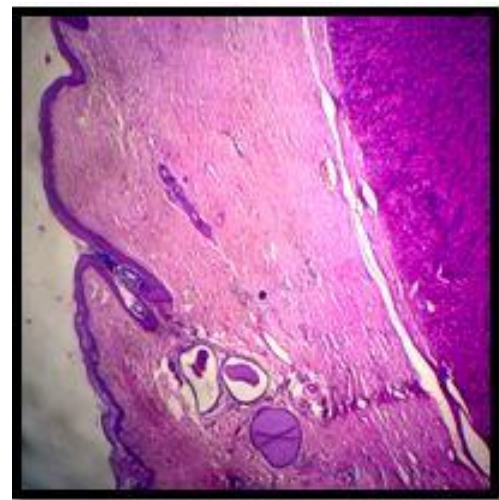


Fig 6,7: skin covered soft tissue tumour of perianal region identified by perianal glands.

Figure 8: 40x

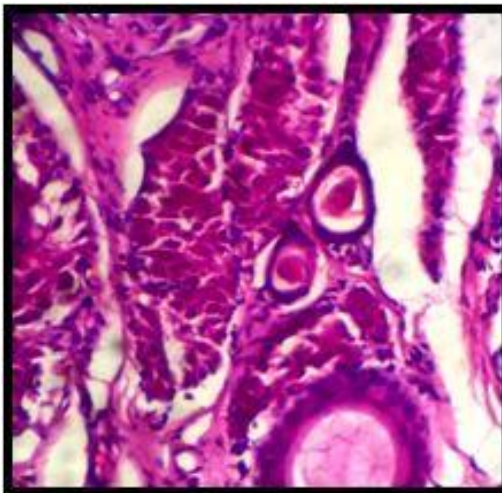


Figure 11: 10x

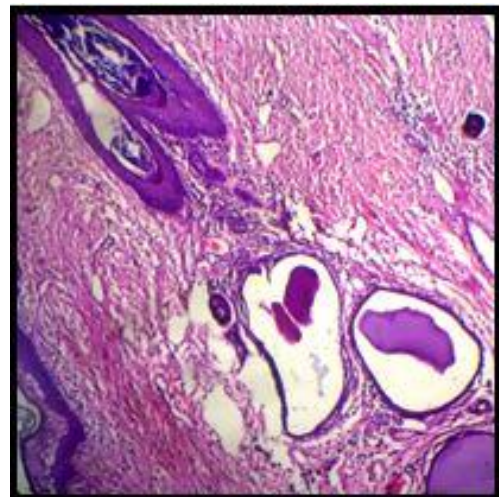


Fig 8: Large tumour cells with centrally placed nuclei.

Fig 9-11: A skin covered vaguely circumscribed soft tissue tumour where perianal glands are identified.

**Figure 12: 10x**

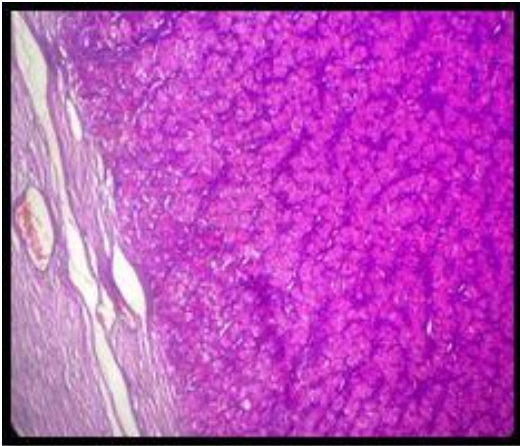
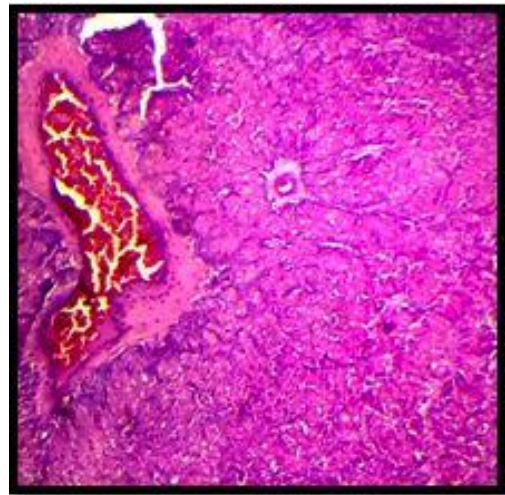


Fig 12: trabecular pattern of tumour cells.

**Figure 15: 10x**



**Figure 16: 40X**

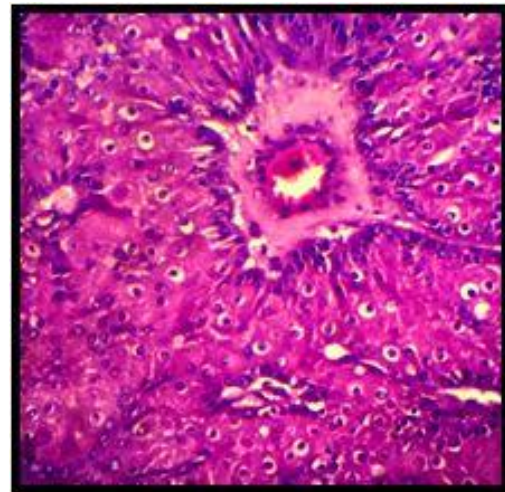
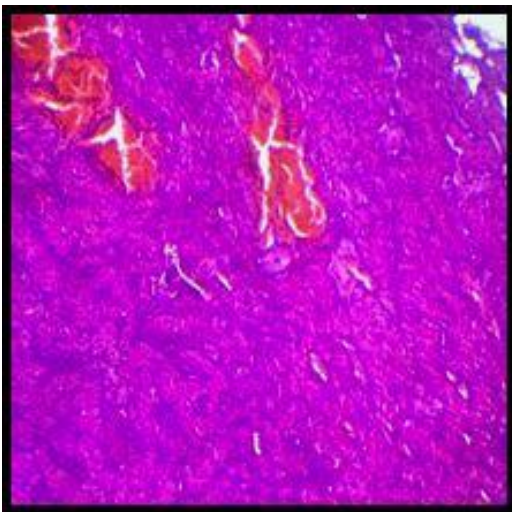


Fig 15,16: Cellular tumour with centrally placed blood vessel having thickened wall which is partially hyalinized. Tumour cells are polygonal in shape with centrally placed nucleus and abundant eosinophilic cytoplasm.

**Figure 13: 10x**



**Figure 14: 40x**

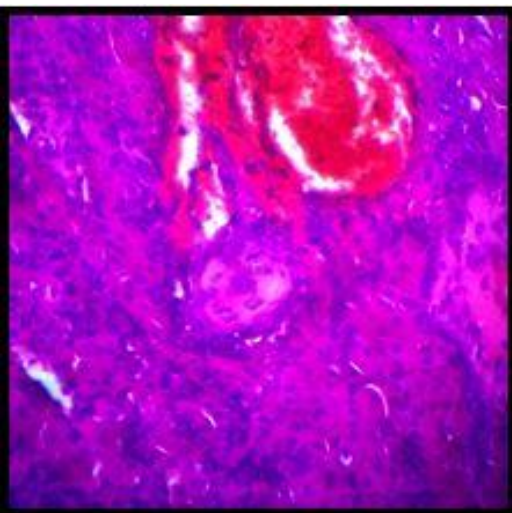
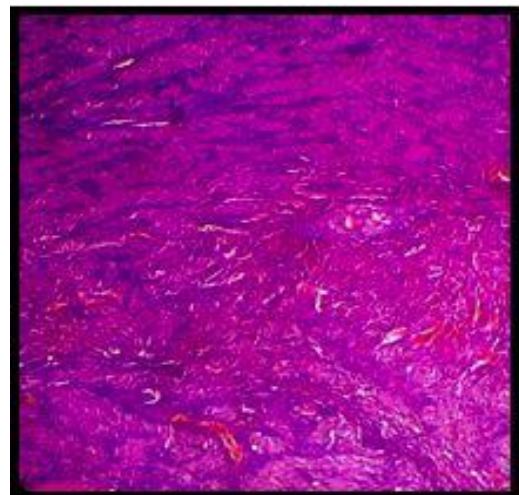


Fig 13,14: cellular tumour with dilated vascular spaces where tumour appears to be invading

**Figure 17: 10x**



**Figure 18: 40x**

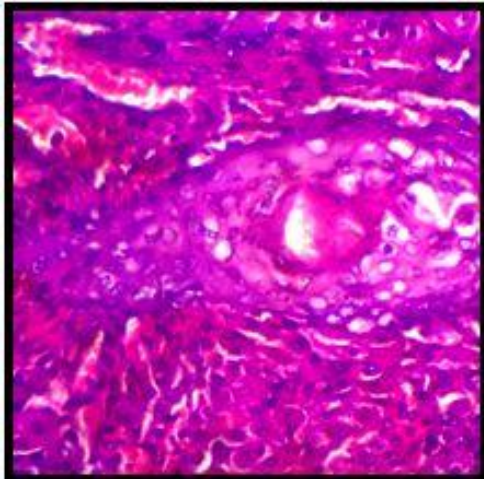
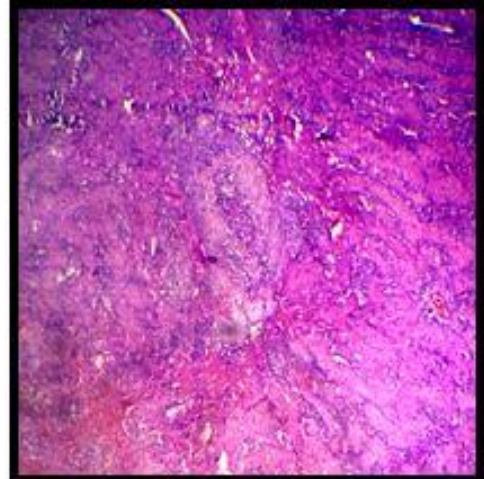
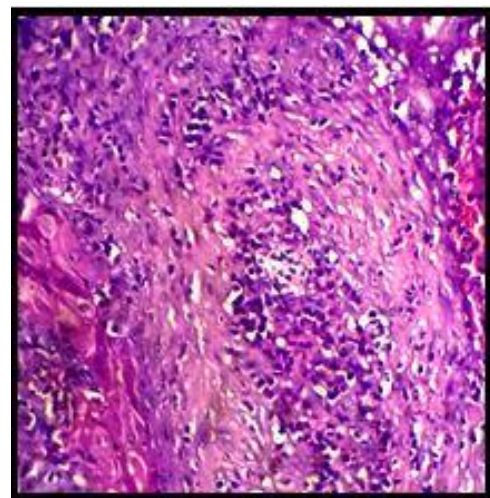


Fig 17,18: tumour with foci of squamous metaplasia.

**Figure 21: 10x**

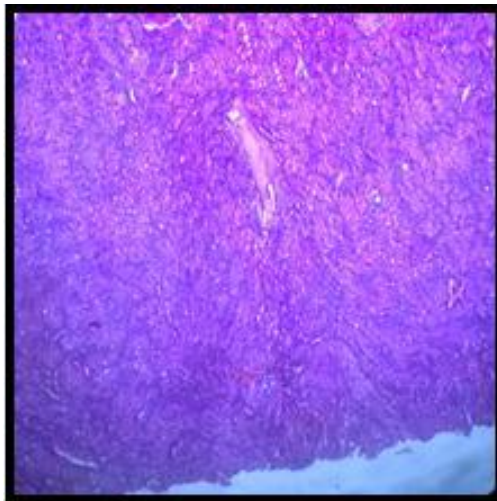


**Figure 22:40x**



**Fig 21,22:** thrombus with clusters of tumour cells inside blood vessel.

**Figure 19:10x**



**Figure 20:40x**

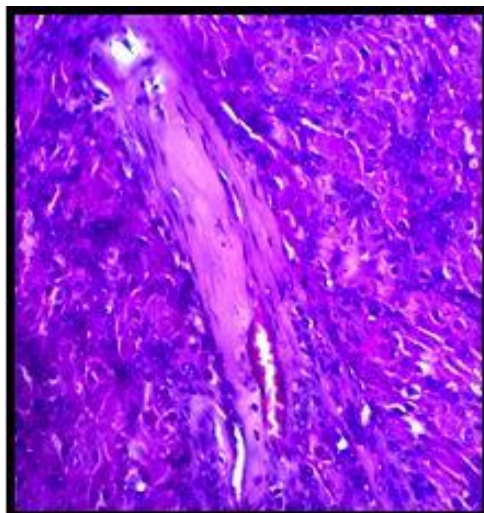


Fig 19, 20- tumour originating from centrally placed nerve bundle.

**Discussion**

The tumours originating in mammals almost have similar morphology comparable to the evolved mammals like primates. Some tumours are frequently observed in certain species. Dogs and primates are probably the only land living mammals found in any part of the continent from polar region to very dry desert land. Several tumours found in human are observed in canine species and some are more frequently found in canine species. Eg: mixed tumour [pleomorphic adenoma] of the breast in female dogs. Large breed dogs eg: St. Bernard can develop osteogenic sarcomas. Prostate cancer can develop in uncastrated dogs.

The presenting soft tissue tumour was seen in a 10 yr old white coloured male labrador, who was otherwise healthy with normal development and life. The presenting symptom was a slow growing tumour in the perianal region with a sudden spurt of increase in size and associated with ulceration and bleeding. The entire episode is of 6 months duration. He developed bleeding over the mass.

The tumour was excised in toto under general anaesthesia which revealed the above features.

The malignant peripheral nerve sheath tumour was the final histological diagnosis. The diagnosis was based on several diagnostic features.

The skin above the neural tumour is always hyperpigmented and it can be vaguely circumscribed [fig-9]. The evidence of origin from thick nerve bundle can be traced [fig 19]. The cells are deceptively benign with abundant granular cytoplasm and prominent nuclei [fig 18]. The cells are arranged in a trabecular pattern [fig 12]. However there can be focal pleomorphism and considerable degree of anaplasia.

Vascular invasion and embolisation can be observed [fig 21]. The vessels are often thickened and hyalinized in neural tumours [fig 15]. Further, heterogeneous differentiation like epithelial [squamous {fig 18} and glandular] and mesenchymal [cartilage and bone] can be noticed. There are various types of MPNST. Some of them are MPNST with rhabdomyoblastic differentiation [Malignant Triton tumour], MPNST with glands [Glandular malignant schwannoma], MPNST with angiosarcoma, Epithelioid MPNST [Epithelioid Malignant Schwannoma], Superficial Epithelioid MPNST.

### Superficial Epithelioid MPNST

Most common site is dermis or subcutaneous tissue. A capsule of a nerve or nerve tumour surrounding a uninodular mass comprising of cells arranged in small groups or cohesive nests. The nests are separated by a fibrous or myxoid stroma.

In the present case, even though the dog is white coloured but he had blue/ black discoloration of the skin suggesting café-au-lait spots. The tumour origin can be traced to thickened nerve bundle. Squamous differentiation is noticed. The vascular embolization and invasion are evident. The vessel wall is thickened and hyalinized.

There was trabecular arrangement of tumour cells. The individual cells are polygonal with abundant granular cytoplasm and prominent nuclei.

### Conclusion

Dog was given chemotherapy with vincristine 0.5mg per week for 3 cycles without any adverse reaction by a well experienced veterinary surgeon, who usually treats malignancy in dogs successfully. After 12 months of follow up, patient is healthy and active.

### Reference

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