The quality of life after a major surgical intervention: mandibulectomy

Eusebiu-Viorel ŞINDILAR, Aurelian-Sorin PAŞCA, Diana-Alexandra BUSUIOC
University of Agricultural Sciences and Veterinary Medicine, Iaşi, Faculty of Veterinary Medicine
3, Mihail Sadoveanu Alley, Iaşi, 700490
esindilar@yahoo.com

Abstract

The tumours localised on the mandibular bone are one of the patologies with a serious prognosis, difficult to approach for the veterinary cliniciens and to accept by the owners. The treatment of choice for most of the cases is the surgical one. The surgical technique varies depending on the portion that has to be removed. For the cliniciens, this intervention represents a challenge requiring solid knowledge of anatomy and possession of a numerous and diverse instruments. For the owners, the decision to choose the surgical solution is difficult to make, the main threats being the change of the animal´s facial aspect after the intervention and the fear that their quality of life will be affected. However, the results are the most time satisfactorily: the pacients not only live for many years after, but they get used very fast to make the prehention of food and to swallow, living a normal life. The only aspect that cannot be controlled is the risk of a recurrence.

Key words*: mandibulectomy, oral cavity, tumours,*

Introduction

Tumours of the oral cavity are the fourth most common type of tumor in dogs and cats, accounting for 5.4% of all malignant neoplasms. (1) The gingival mucosa is most commonly affected, but the oral, mucous membrane, soft palate, tough palate and tongue can also be affected. (2) Major surgery is the main indication for oral and maxillofacial malignancies and is surprisingly well tolerated by dogs and cats. The quality of animal life after mandibular surgery is excellent.

Material and method

Tumours of the oral cavity, either malignant or benign, sometimes involving the mandible and the periosteum, require excision of the affected bone segment by mandibular surgery. The bone fragment which has to be resected is determined by the localisation of the tumor process. Tumours located unilaterally or bilaterally in the rostral part of the mandible can be excised without difficulty. Partial mandibulectomy is also indicated in the treatment of certain mandibular fractures and in mandibular osteomyelitis. Mandibulectomy is the main surgical procedure indicated to remove fragments that cause pain in fractures whose primary ossification has failed. (5) Depending on the excised segment, mandibulectomies are divided into: partial (unilateral or bilateral), rostrale, or including a portion of the mandible body, total (unilateral resection of one of the two mandibular bones) or, most radically, the total resection of one mandible and a portion of the other. (3,4)

The eight-years-old labrador dog was presented at the Surgery Department of the Faculty of Veterinary Medicine in Iaşi after an aggressive recurrency of the oral tumor. This tumor was previously excised and relapsed faster than before in less than two months.

A radiological and anatomopathological examination was required for an accurate diagnostic. The radiological examination (Fig. 1) confirmed the presence of a tumour mass that affected the mandible bone, and the anatomopathologic one provided the diagnosis of gingival fibrosarcoma. In order to perform the surgery, the dog was placed in lateral decubitus on the opposite side of the tumor. (Fig. 2)

For a better exposure of the region, the mouth was opened with a mouth speculum. After trimming the hair in the mandibular region, the asespsia was secured with an iodine solution. Anesthesia was a combination of xylazine-ketamine, premedicated with atropine. The first operative time was consisted in the isolation through a firm incision in an elongated flap of the

labial lobe and of the right sublingual recess, using an electric scalpel, keeping strictly the trace and integrity of the Wharton duct and the monostomal sublingual gland (Fig. 3). The take-off of the soft structures (muscles) from the lateral and medial sides of the segment that was subsequently dissected was then made. Hemostasis was provided by ligation of the main vessels, but an essential role in stopping the bleeding due to small and medium sized vessels was the use of the electrocautery and the bipolar twin.

The mandibular bone segment and the soft tissues covering it were both removed by (using) a pneumatic oscillating blade osteotomy. The mandibula was resected from mandibular symphysis level (Fig. 4) to the aboral edge of the mandibular body. For better viewing during surgery, it was necessary to use a surgical vacuum cleaner. After removal of both, the mandible bone segment and the tumour, the suture of the lining of the mucosa and the sublingual mucosa was made using a PGA 2/0 resorbable suture thread in separate points. (Fig.7)

Immediately after surgery, tumour mass fragments were harvested and fixed for 72h in 10% formaldehyde solution. After fixation, tissue fragments were embedded in paraffin, cuted at 5 micrometers, stained by the Masson trichromic method and examined with a Leica DM 750 optical microscope, the images being taken up with a Leica Application Suit (LAS) digital software version 4.2. (Fig. 8).

Results and discussions

After the surgical procedure, the dog received prophylactic antibiotic therapy with a broad spectrum antibiotic from the penicillin group for 3 days and analgesics, both parenterally. The postoperative diet, starting on the day after surgery, was consisted of liquid food for two weeks. Some of the most common postoperative complications are wound dehiscence, in which case it is recommended to perform secondary sutures, postoperative infections and tumour recurrence in the case of micrometastases.

Histologically, at the surface of the tumour, diffuse acanthosis, characterized by proliferation and hypertrophy of the spinous cells were observed. Thick cells are large, well-contoured and with highlighted desmosomes. No superficial keratinized layer was observed. Tumor tissue was organized into compact (massive) area, consisting of spindle cells with large, irregular, vesicular nuclei, powdered chromatin and a prominent nucleus. Numerous mitotic figures and syncytia have been observed. Connective fibers have a chaotic orientation, either in the form of cords or concentric. Neoformation vessels are present, and the stromal tumor is poorly developed. As a cellular type and architecture of the tumor, the histopathological exam revealed fibrosarcoma, associated with an acanthosis of the oral mucosa. (Fig. 9)

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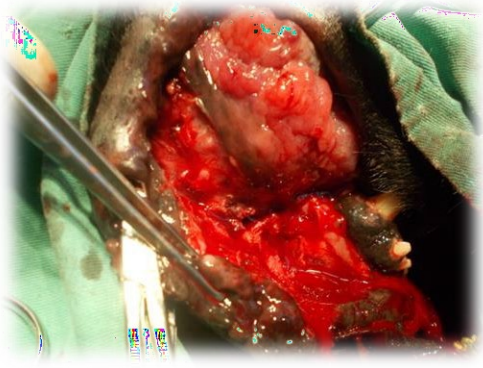
Fig. 1. Radiological examination of the head region - the tumor process invaded the bone tissue
Fig. 2. The macroscopic aspect of the tumour



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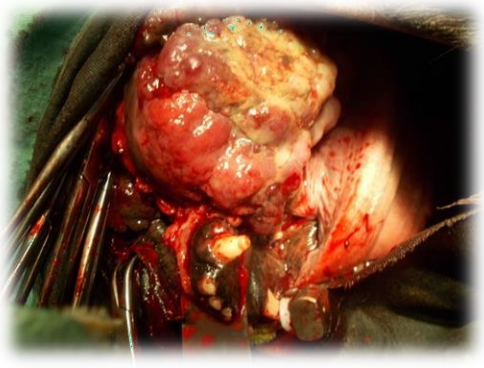

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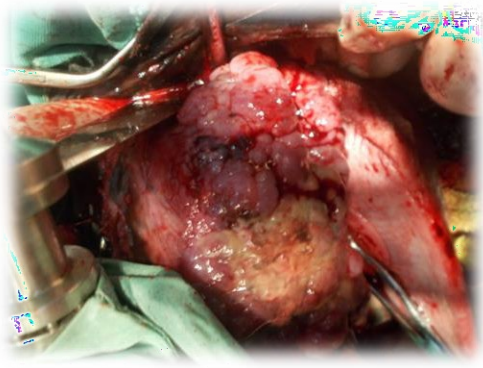
Fig. 3. The incision of the labial mucosa
Fig. 4. The osteotomy of the mandible at the symphysis region



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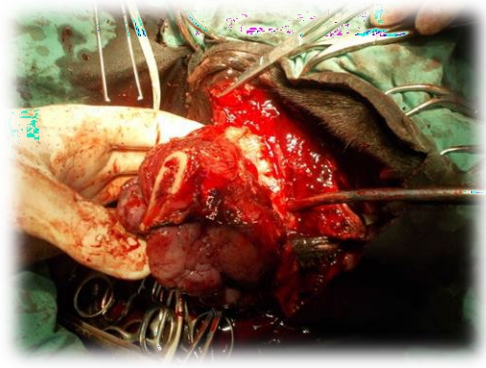

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Fig. 5. Osteotomy of the mandible at the condyle region
Fig. 6. Hemostasis achieved by cushing blood vessels and aspiration of fluids

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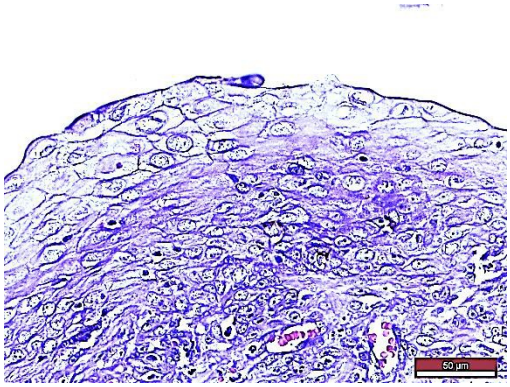

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Fig. 7. The suture made in separate points using 2/0 resorbable thread
Fig. 8. Achantosis. Oral Mucosa. Tricromic Masson Stain

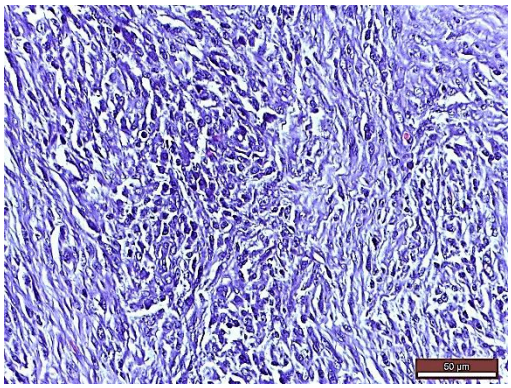

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Fig. 9. Fibrosarcoma.Tricromic Masson Stain
Fig. 10. Overall appearance two weeks postoperatively

Conclusions

The general aspect of the animal is determined by the dimensions of the excised portion. If hemimandibulectomy is made to the level of the canine, the differences are almost insensible. If the excised portion exceeds the lower canine, the tongue tends to stay out of the oral cavity. (Figure 10)

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