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EXTIRPATION OF THE MANDIBULAR SALIVARY GLANDS IN EQUINE AND RUMINANTS

(With 2 Tables & 3 Figs.)

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الإزالة الجراحية للغدة تحت الفكية في المجترات والفصيلة الخيلية

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تم في هذا البحث الإزالة الجراحية للغدة التحت فكية في عدد ١٨ حيوان يمثلـون الحصان والبغال والحمير والجاموس والأبقار والأغنام والماعز. وقد تم أيضا عمل دراسة مبدئية تشريحية على رؤوس هذه الحيوانات لدراسة العلاقة التشريحية بين موضع هذه الغدة والأنسجة التي حولها. ولقد وجد أن ازالة الغدة تحت فكية في هذه الحيوانات ممكنة وبدون أية مضاعفات كما تبين أيضا أن مكان اجراء العملية يختلف في المجترات عن الفصيلة الخيلية كليتاً.

SUMMARY

Surgical extirpation of the mandibular salivary gland was performed in 18 animals including horses, mule, donkeys, buffaloes, cows, sheep and goats. A preliminary work was conducted on a fresh and formalinized head and neck specimens to study the anatomical relation-ship of the gland with the surroundig structures.

Surgical extirpation of the mandibular salivary gland was found possible and performed without postoperative complications. The seat of operation is completely differs between ruminants and equine. In ruminants the seat of surgical exposure is at the caudal area of the mandibular space. In equine the line of incision is behind the vertical ramus of the mandible near the wing of the atlas.

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INTRODUCTION

Mucocele is the most common condition affecting the salivary glands. It develops when saliva leaks from a duct or gland and enters the surrounding soft tissues of cranial cervical, mandibular, sublingual or pharyngeal tissues (KARBE & NIELSON, 1966; SPRUELL & HEAD, 1967; HOBSON, 1971; GLEN, 1972; HOFFER, 1975; KNECHT, 1981; LANE, 1982; HARVEY, O'BRIEN, ROSSMAN & STOLLER, 1983; BOJRAB, et al. 1983 & WEBER, HOBSON & WILSON, 1986). Saliva contains digestive enzymes which are irritant to connective tissues and thus accumulation of escaped saliva tend to be surrounded by a wall of inflammatory tissue which gives the lesion a cystic apearance (HULLAN, 1964; HOFFER, 1975 and LANE, 1982).

The inciting cause of mucoceles is unknown, but trauma is strongly suspected (STANDISH & SHAFER, 1959; HULLAND & ARCHIBALD, 1964; GLEN, 1966; KARBE, et al. 1966 & KNECHT, 1981). Rupture of Wharton's and Bartholin's ducts as a result of obstruction and distention or external traume are highly suggested (MAYER, et al. 1959; ANON, 1964 & HULLAND, et al. 1964). Mucocele was frequently reported in dogs (SPRUELL and HEAD, 1967; HOBSON, 1971; KNECHT, 1981 and HARVEY, et al. 1983) and rarely recorded in other domestic animals (MISK & NIGAM, 1984).

Diagnosis is usually based on history, physical examination, palpation, paracentesis and sialography (SPREULL, et al. 1967; HOFFER, 1975; LANE, 1982 & BOJRAB, et al. 1983).

The treatment of choice for salivary mucoceles is the surgical excision on the side involved of the mandibular and sublingual glands and ducts coupled with drainage of the cyst (ANON, 1964; GLEN, 1966; SPREULL, et al. 1967; HOBSON, 1971; HOFFER, 1975; WINGFIELD, 1979; LANE, 1982; HARVEY, 1985 & WEBER, et al. 1986). Surgical excision of the mandibular and sublingual salivary glands was documented in dogs while available literatures lack any informations about surgical extirpation of these glands in other domestic animals.

The aim of the present study is to describe surgical techniques for extirpation of the mandibular salivary gland in ruminants and equine.

MATERIAL and METHODS

Surgical extirpation of the mandibular gland was performed on a total number of 18 animals (horses = 2; donkeys = 4; buffaloes = 2; cows = 2; sheep = 3 and goats = 3) to study the possibility of the gland extirpation and advocate the reliable surgical technique.

Operations were performed under effect of tranquilization (Rompun "xylazine H cl" 0.05 mg/kg b.w. in bovine and 0.2 mg/kg b.w. in ovine) and local infiltration anaesthesia and chloral hydrate narcosis in equine (8 gm/100 kg b.w., 10% solution i.v). The technique of operation was fully described in each animal as regards to the seat of operation, the possibility of surgical extirpation and postoperative complications.

A preliminary work was conducted on a fresh (= 7) and formalinized (= 7) head and neck specimens to study the surgical anatomy of the mandibular salivary gland in equine and ruminants concerning the topographical relationship, length, width and thickness of the gland.

RESULTS

The topographical relationship and dimentions of the mandibular salivary glands in equine and ruminants are illustrated in tables (1 & 2).

Cow and Buffalo:

A sagital incision was made in the mandibular space starting at a midpoint between the mandibular angle and hyoid bone and extends caudad for about 6-8 cm. After opening the skin and underlying fascia the ventral part of the palpable mandibular gland was exposed with its will developed capsule. The capsule was opened and the gland was grasped by Allis tissue forceps. The lobules of the gland were seen connected to each other by strong interlobular connective tissue. Blunt and sharp dissections were carried out to seperate the lateral and rostral surfaces of the gland then the proximal extremity was freed. The later was grasped by Allis tissue forceps to facilitate the dissection of the caudal and deep surfaces of the gland. The blood vessels which ramify into the deep surface were ligated and dissection was continued until the gland was completely separated as a one mass except at the seat of duct. The later was ligated and severed. The s/c tissue and skin were apposed as usual (Fig. 1).

Sheep and Goat:

The aforementioned technique was performed in small ruminant. The line of incision starts between the mandibular angle and the hyoid bone and extend caudad for about 3 cm only. The capsule of the gland was very thin and when opened during dissection the lobules of the glands were found loosly attached to each other. Careful blunt and sharp dissections were carried out until the gland was removed (Fig. 2).

Equine:

A skin incision (7-10 cm length) was performed starting at a midpoint on the ventral border of the wing of the atlus and extended caudoventrally. The incision passed through the skin, superficial facia and then the aponeurosis connecting the sternocephalic

and brachiocephalic muscles. Through this incision the gland was observed and detected by the characteristic lobulation of its glandular tissue through a thin capsule. The gland was grasped by Allis tissue forceps from its caudal thick border and dissected from its superficial and deep surfaces as well as its proximal extremity (Fig. 3). The blood vessels attached to the deep surface of the gland were ligated and disconnected. The gland was extruded through the skin incision from its proximal extremity and the blood vessels enter the distal extremity of the gland together with the duct were ligated and severed. The aponeuroses between the brachiocephalic and sternocephalic muscles were coaptated and the subcutaneous tissues and skin were apposed as usual.

Recovery was uneventful in all animals. A slight swelling at the seat of operation was determined in some animals at the first 3 postoperative days and subsides gradually. The skin stitches were removed 10 days postoperatively.

DISCUSSION

Surgical extirpationof the mandibular salivary gland in ruminants and equine was found possible and performed without postoperative complication. The seat of operation is completely differs between ruminants and equine. While the seat of surgical extirpation of the gland is at the caudal area of the mandibular space in ruminants, it is behind the vertical ramus of the mandible near the sing of the atlus in equine. This variation is due to the anatomical position of this gland in each group of animals. Variations between different members of ruminants and equine species were unsignificant and concerning only the length of surgical incisions and size of the glands.

Accurate determination of the seat of surgical exposure of the gland is the key for successful extirpation. The operation is somewhat lengthy procedure and requires fastidious dissection of the gland from the surrounding vital structures. Exposure of the glandular tissue by opening the capsule of the gland facilitates the process of extirpation and prevents traumatization of the surrounding nerves and blood vessels.

The described techniques were suggested for extirpation of the mandibular salivary gland in ruminants and equine.

REFERENCES

Anon (1964): The confusing cervical cyst (Editorial). J.A.V.M.A., 145 (1): 49-50.

Bojrab, M.J.; Crane, S.W. and Arnoczky, S.P. (1983): Current Techniques in small Animal Surgery. Lea & Febiger, Philadelphia. 2nd ed. pp. 126-129.

Glen, J.B. (1966): Salivary cyst in the dog; Identification of sublingual duct defects by sialography. Vet. Rec., 78: 488-492.

Glen, J.B. (1972): Canine slivary mucoceles, Results of sialographic examination and surgical treatment of fifty cases J. Small. Anim. Pract., 13: 515-525.

Harvey, C.E. (1985): Veterinary Dentistry W.B. Saunders Company, Philadelphia, P. 188-201.

Harvey, C.E.; O,Brien, J.A.; Rossman, L.E. and Stoller, N.H. (1983): Oral,Dental, pharyngeal and salivary Gland Disorders, In: Textbook of Veterinary Internal Medicine, ed. 2, Ettinger, S.A., editor, W.B. Saunders, Co., P. 1187.

Hobson, H.P. (1971): Salivary cysts. J. Texas Vet. Med. 1 (33): 13-14.

Hoffer, R.E. (1975): Surgical treatment of salivary mucoceles. Symposium on surgical techniques in small practice. Vet. Clin. North Am., 5: 333-334.

Hulland, T.J. (1964): Salivary mucocele. Proc. Book AVMA, 152-154.

Hulland, T.J. and Archibald, J. (1964): Salivary mucoceles in dogs. Can. Vet. J. 5 (5): 109-117.

Karbe, E. and Nielson, S.W. (1966): Canine ranulas, Salivary mucoceles and branchial cysts. J. small Anim. Pract., 7: 625-630.

Knecht, C.D. (1981): Salivary glands. In: Bojrab, M.J., ed. Pathophysiology in small animal surgery. Philadelphia, Lea and Febiger, P. 84-89.

Lane, J.G. (1982): Ent and oral surgery of the dog and cat. A Veterinary Practitioner Handblook Series, Edited by Neal King BVSC MRCVS, WRIGHT. PSC, Bristol, London, Boston.

Mayer, K. and Hoskins, H.P. (1959): Sublingual and submaxillary salivary cyst. Canine Surgery, A Text and Reference work, 4th ed., American Veterinary Publications, Inc. Santa Barbara, California.

Misk, N.A. and Nigam, I.M. (1984): Ranula in a cow. Assiut Veterinary Medical Journal, 12 (24).

Standish, S.M. and Shafer, W.G. (1959): The mucous retention phenomenon. J. Oral Surg., 17: 15-22.

Weber, W.J.; Hobson, H.P. and Wilson, S.R. (1986): Pharyngeal mucoceles in dogs. Vet. Surg., 15 (1): 5-8.

Wingfield, W.E. (1979): Salivary gland excision. In: Wingfield W.E., Rawlings C.A. Small animal Surgery. Philadelphia: WB. Saunders, 61-65.

LEGENDS

Fig. (1): Extirpation of the mandibular salivary gland in a buffalo.

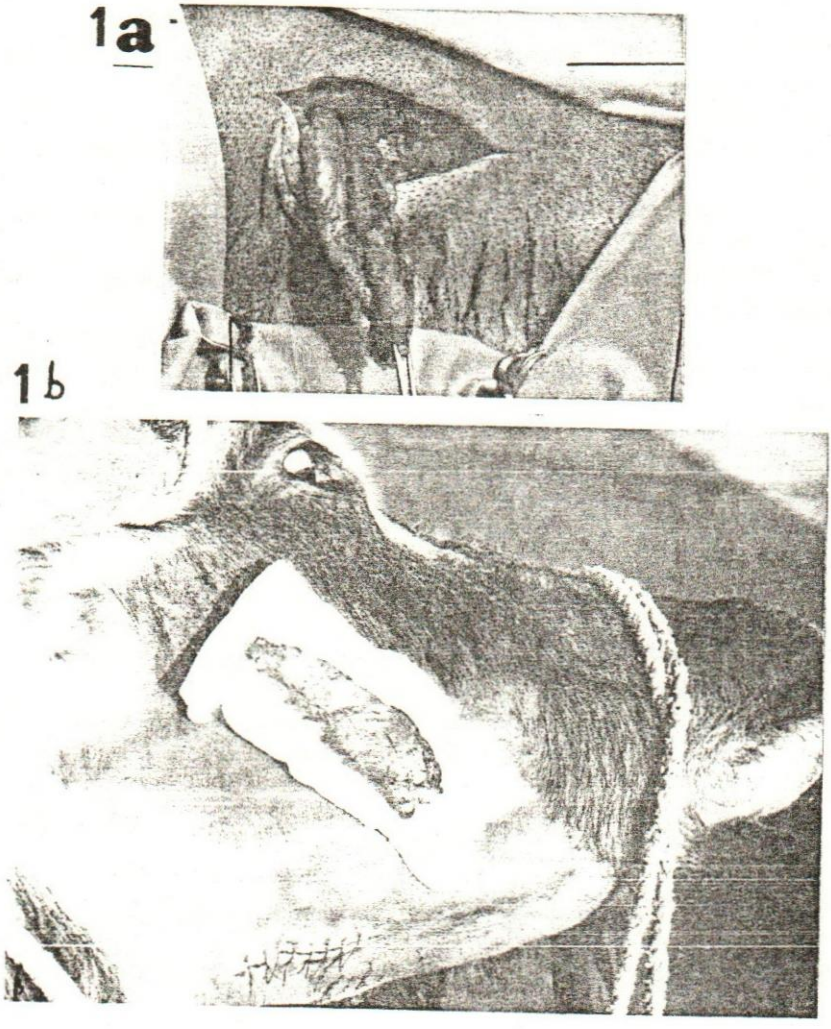
A) During operation.

B) After surgery, indicate the accurate seat of operation.

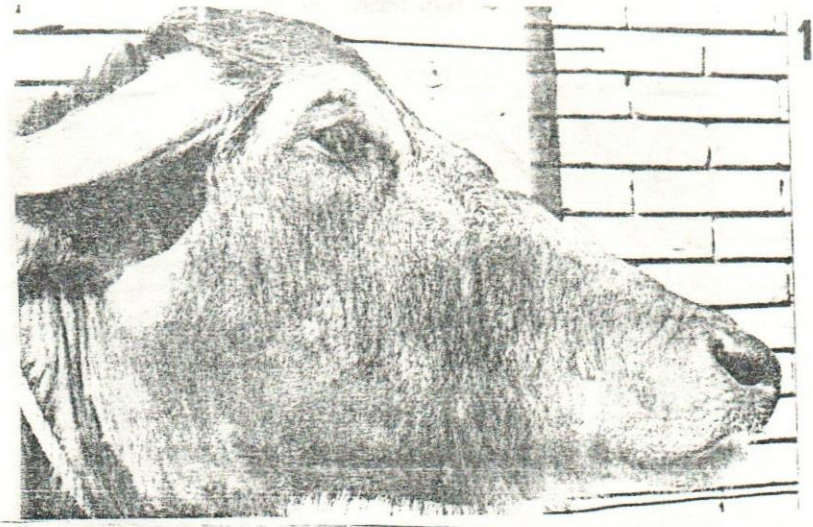
C) 10 days after surgery.

Fig. (2): Extirpation of the mandibular salivary gland in a sheep.
A) During operation, note the loose lobulation of the glandular tissue.
B) After surgery, note the accurate seat of operation.

Fig. (3): Extirpation of the mandibular salivary gland in a horse.
A) Before surgery, 1. The ventral border of the wing of the atlas. 2. The seat of incision line.
B) During surgery.



MANDIBULAR SALIVARY GL, EXTIRPATION



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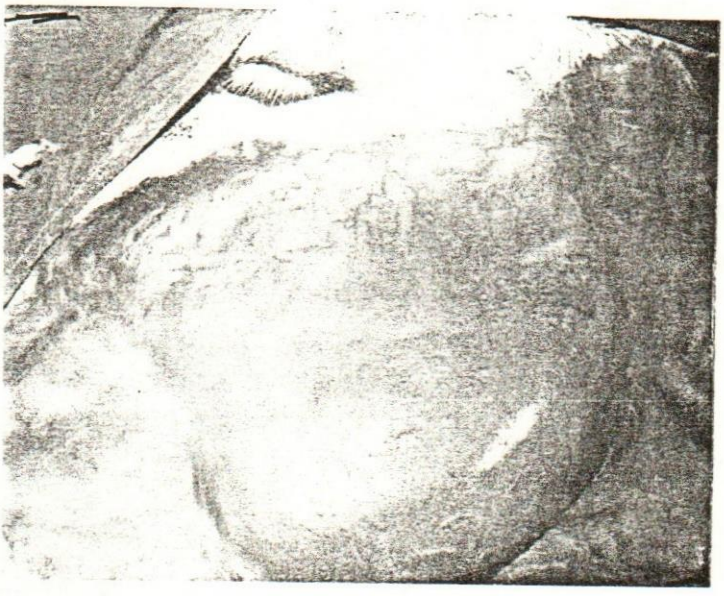

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