قسم : التوليد وأمراضها والتلقيح الصناعي والجراحة .
كلية : الطب البيطرى - جامعة الاسكندرية .
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التشريح الجراحي لبعض أعصاب الرأس وتخدير بها في الماعز

مصطفى قاسم ، محمد أمين

أجريت الدراسة التشريحية على عدد ستة رؤوس من الماعز البالغ من الجنسين وحقنت بـ ١٠ ٪ فورمالين ، وتم تشريح كل من العصب الفكي العلوى والعصب الفكي السفلي .

استخدم في البحث عدد ستة ماعز حية من الفصيلة البلدى بعد تجهيزها للحقن بالمخدر الموضعي حول العصب .

واتضح من النتائج انه من السهل الوصول الى العصب الفكي العلوى من خلال فتحة (تحت مقلة العين) وكذلك العصب الفكي السفلي من خلال فتحة خروج العصب من الناحية الوحشية للذقن . ويعتبر هذين المكانين كافيان لتخدير الفك العلوى من الامام حتى مستوى الضرس الثاني ، والفك السفلي حتى مستوى الضرى الأول .

وظهر تأثير المخدر الموضعي بعد عشر دقائق من الحقن واستمر التخدير مدة ٧٠ دقيقة .

Dept. of Theriogenology & Surgery,
Faculty of Vet. Med., Alexandria University,
Head of Dept. Prof. Dr. B. Noseir.

SURGICAL ANATOMY OF SOME NERVES OF THE HEAD AND THEIR MODE OF BLOCKING IN GOATS

(With 4 Figs.)

By
M.M. KASSEM and M.E. AMIN

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SUMMARY

The anatomical study was carried out on six heads of adult goats of both sexes. They were injected with 10% formaline solution. Careful dissection of the maxillary and mandilulo-alveolar nerves and determination of the site of their blocking. Nerve block was carried out on six alive balady goats. From the obtained results of the present investigation, it was clear that the accurate position to block the infra-orbital nerve was through the infra-orbital formen, which can be easily palpated. However the mental nerve can be blocked through the mental foramen, while is difficult to palpate.

The area of desenstization included the dental pad, the first two premolar cheek teeth in upper jaw, the incisors and first premollr cheek tooth in the lower jaw. Desenstization of the whole upper and lower jaws together with their cheek teeth was obtained by blocking the maxillary and the mandibulo-alveolar nerves.

The effect of the local anaesthetic began 10 minutes following injection, and the duration of anaesthesia lasted 70 minutes.

INTRODUCTION

The exposure of some nerves of the head in the goat and their mode of blocking has no adequate attention, however many papers have discussed the subject of anaesthesia about the head regions in different species, in buffaloes (FOUAD, et al. 1979 and OTHMAN and ATTIA, 1984), in camel (KAMEL, 1978; EL-SHAIEB, et al. 1979 and EL-SHEIKH, 1979), in cattle (LUMB and JONES, 1973; MAGDA and VARONEN, 1974 and HALL and CLARKE, 1983) in equines (BERGE and WESTHUES, 1966; LUMB and JONES, 1973 and HALL and CLARKE, 1983).

In small ruminant practice, it is usually possible to perform surgical operations under the effect of regional and local anaesthesia (BERGE and WESTHUES, 1966). Local infiltration of large quantities of anaesthetic drugs, may cause local reactions and delayed healing. This disadvantage can be overcome by using a regional nerve block (OEHME and PRIER, 1974). Regional anaesthesia by blocking some nerves of the head region in goats is very beneficial. Desenstization of the upper and lower jaws occur by blocking the maxillary and mandibulo-alveolar nerves or their continuations respectively, for surgical interference of some affections such as, polypi, epulis, deep lacerated wounds and exraction of an affected tooth in the maxilla or the mandible (BERGE and WESTHUES, 1966 and OTHMAN and ATTIA, 1984).

MATERIAL and METHODS

The present anatomical study was carried out on six heads of adult goats of both sexes collected from Damanhour abbatoir. They were injected with 10% formaline solution through the common carotid artery and preserved in the same solution. Careful dissection of the maxillary and mandibulo-alveolar nerves and their distribution was carried out. Six living goats were used to judge the effect of the maxillary and the mandibulo-alveolar nerve block. The area of injection in the maxilla and mandible was clipped, shaved and disinfected with 2% tincture of iodine.

The maxillary nerve was blocked in two sites:

A- Through the depression superior to the zygomatic process of the temporal bone which is bounded rostrally by the zygomatic process of the frontal bone and caudally by the coronoid process of the mandible. A long needle (6 cm- 20 gauge) is pushed with its whole length ventrorostrally toward the pterygopalatine fossa just in contact to the caudal part of the maxillary bone, 5 ml of a 2% procaine HCl was deposited in this seat, (Fig. 1).

A- The maxillary nerve can be also blocked in the pterygopalatine fossa by selecting a point on the face opposite to the lateral canthus of eye and just inferior to the zygomatic arch in the space between the cranial border of the mandibular ramus and the caudal part of the maxillary bone. The needle is directed cranio-medially for a depth of 4 cm toward the pterygopalatine fossa just in contact with the caudal part of the maxillary bone (Fig. 2).

B- The continuation of the maxillary nerve named the (infraorbital nerve) is blocked through the infra-orbital foramen, inside the angle formed by a line running from the naso-incisive notch to the interdental space between the first and second premolar cheek tooth, and another line extending from the ventral edge of the zygomatic arch to a level of the first premolar cheek tooth. The caudal margin of the infra-orbital foramen can be palpated just infront of the maxillary tuberosity. The needle is inserted in a ventro-caudal direction for about 1.5 cm through the infra-orbital foramen, where the local anaesthetic was deposited in a dose of 5 ml, 2% solution, (Fig. 3).

The mandibulo-alveolar nerve was blocked in two positions:

A- The needle was inserted at the mandibular angle in a crossing point between a vertical line running from the lateral canthus of the eye to the mandibular angle, and a horizontal line parallel to the table of the cheek teeth. The needle must be close to the medial surface of mandibular ramus with a depth of 4 cm, (Fig. 4). 2% procaine Hcl solution in a dose of 5 ml was infiltrated at this point.

B- The continuation of mandibulo-alveolar nerve named (mental nerve) was blocked through the mental foramen. This foramen can be palpated with difficulty from the lateral border of the mandible at the middle of the interdental space between the corner incisor and the first premolar cheek tooth, one centimetre rostral to the oral commissure, close to the alveolar border more than the ventral border. The needle is pushed ventro-caudally for a distance of about one centimetre with the same dose and concentration of procaine Hcl, (Fig. 3).

RESULTS

Anatomical Results:

Maxillary nerve.

The maxillary nerve is a branch from the trigeminal nerve leaving the cranial cavity through the orbitorotundum foramen courses rostrally to reach the pterygopalatine fossa to enter the infra-orbital canal through the maxillary foramen where it continues as the infra-orbital nerve. During its course inside the infra-orbital canal it gives off maxillary alveolar branches to supply the upper cheek teeth. The infra-orbital nerve after emerging from the infra-orbital foramen in the lateral nasal region, divides into dorsal and ventral group of branches. Both groups lie under cover of the depressor labii maxillaris, the caninus and the levator labii maxillaris.

The dorsal group of branches are larger and give off:

1) External nasal branches (2-3 in number) which ascend deep to the muscle levator labii maxillaris, caninus and depressor labii maxillaris, pierce the muscle levator nasolabialis and distribute in the skin of the lateral and dorsal nasal regions.

2) Internal nasal branches (3-4 in number) leave the dorsal group and run rostral and medial to be distributed in the mucosa and skin of the nasal vestibule.

3) Rostral maxillary labial branches: They run medial to the insertion of caninus and depressor labii maxillaris and divide into several twigs which terminate in the skin of the latero-rostral part of the nasal region and the rostral part of the upper lip.

The ventral group of the infra-orbital nerve constitutes two branches which pass rostrally under the caninus and the depressor labii maxillaris as the caudal labial branch. It supplies the caudal portion of the maxillary lip.

Mandibulo-alveolar nerve.

It is the terminal division of the mandibular nerve. At its origin it releases the mylohyoid nerve then runs ventrally and passes on the lateral surface of the temporalis muscle near its mandibular insertion and enter the mandibular canal through the mandibular foramen. Inside the mandibular canal it gives off caudal and middle mandibulo-alveolar branches which inervate the lower cheek teeth. Before leaving the mandibular canal, it gives off rostral mandibulo-alveolar branches that pass in the incisor canal, supplies the incisor teeth. The mandibulo-alveolar leaves the mandibular canal through the mental foramen as the mental nerve which divides into 2-3 branches distributed in the mandibular lip.

Anaesthetic Results.

Bilateral nerve block of the infra-orbital and mental nerves gave good results of desenstization to the region fo the upper lip together with dental pad and first two premolar cheek teeth and lower lip with its incisors and first premolar tooth. The area of desenstization increased by blocking the maxillary and mandibulo-alveolar nerves, where the upper and lower cheek teeth were anaesthetized. The lower lip lost completely its sensation together with the upper lip. The onset of anaesthesia began nearly ten minutes post injection and lasted for an average time of 70 minutes.

DISCUSSION

The present study revealed that the infra-orbital nerve in the goat after its emergence from the infra-orbital foramen is divided into two groups of branches, a finding similar to that observed in ovines and bovines by DELLMANN and McCLURE (1975), in camel by TAYEB (1957); EL-SHEIKH (1979) and OTHMAN and ATTIA (1984). However MCLEOD (1958) stated that such nerve in bovines is divided into three branches.

In the present investigation, it has been found that the infra-orbital nerve supplies the nasal vestibule and the maxillary lip, a result similar to that reported in ovines and bovines by DELLMANN and McCLURE (1975) and in camel by EL-SHAIEB, et al. (1979) and OTHMAN and ATTIA (1984). The course and distribution of the mandibulo-alveolar nerve in the present study is similar to that reported in ovines and bovines by DELMANN and McCLURE (1975).

In the present study, the results obtained from blocking of some nerves of the head in goats are similar to that recorded by EL-SHAIEB, et al. (1979), who used the method of blocking the infra-orbital and mental nerves in camels through the infra-orbital and mental foramina. Contrarily BERGE and WESTHUES (1966) and LUMB & JONES (1973) used another technique for blocking the mental nerve by introucing the needle from the gum through the mental foramen in cattle and equines.

From the present study, it was clear that the accurate site for blocking the infra-orbital and mental nerves at its canal through the infra-orbital and mental foramina, but in case of blocking the maxillary and mandibulo-alveolar nerves, it is of atmost importance to detect the seat of exact infiltration perineurally as stated before.

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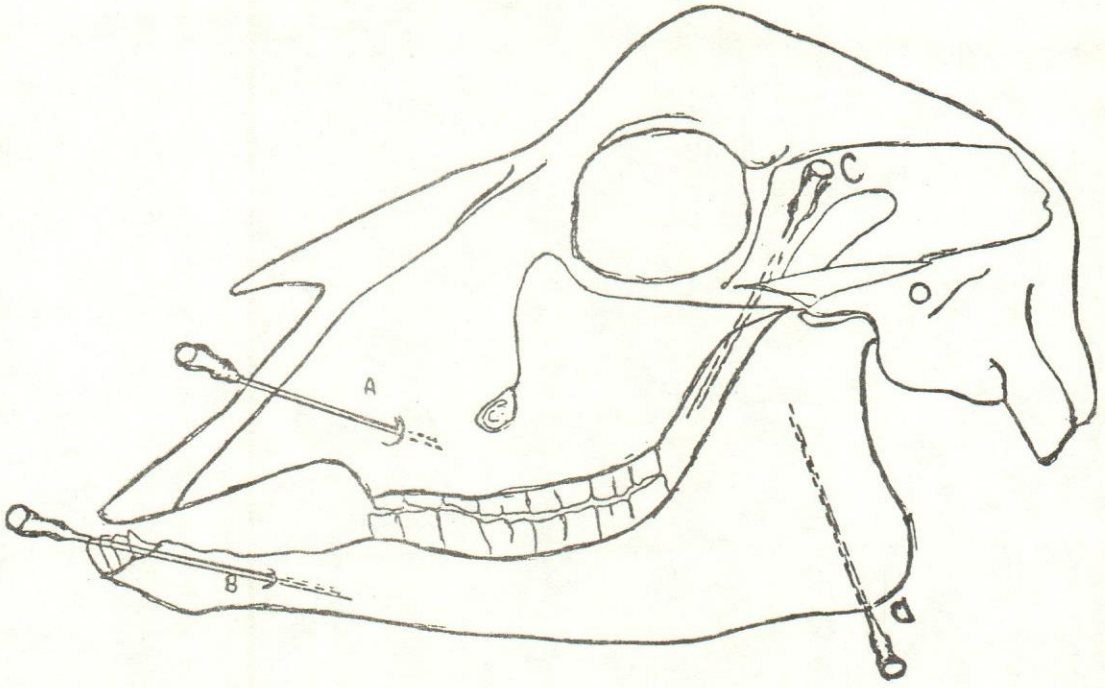
LEGENDS TO ILLUSTRATIONS

SITE FOR BLOCKADE.

(A) Infra-orbital nerve
(B) Mental nerve
(C) Maxillary nerve
(D) Mandibulo-alveolar nerve

a- a line extending from naso-incisive notch to the interdental space between first and second premolar teeth.
b- a horizontal line extending ventral to zygomatic arch till crossing the line (a).
c- a line extending from the lateral canthus of the eye to the mandibular angle.
d- a horizontal line parallel to the table of cheek teeth.
e- intersection point corresponding to the mandibular foramen.

1- nasoincisive
2- nasal bone.
3- incisive bone.
4- infra-orbital foramen.
5- maxillary tuberosity.
6- zygomatic arch.
7- orbit.
8-parietal bone.
9- temporal bone.
10- coronoid process of the mandibule.
11- condyloid process of the mandibule.
12- angle of the mandibule.
13- mandibule.
14- mental foramen.
15- incisors.
16- premolar teeth.
17- molar teeth.
18- maxillary bone.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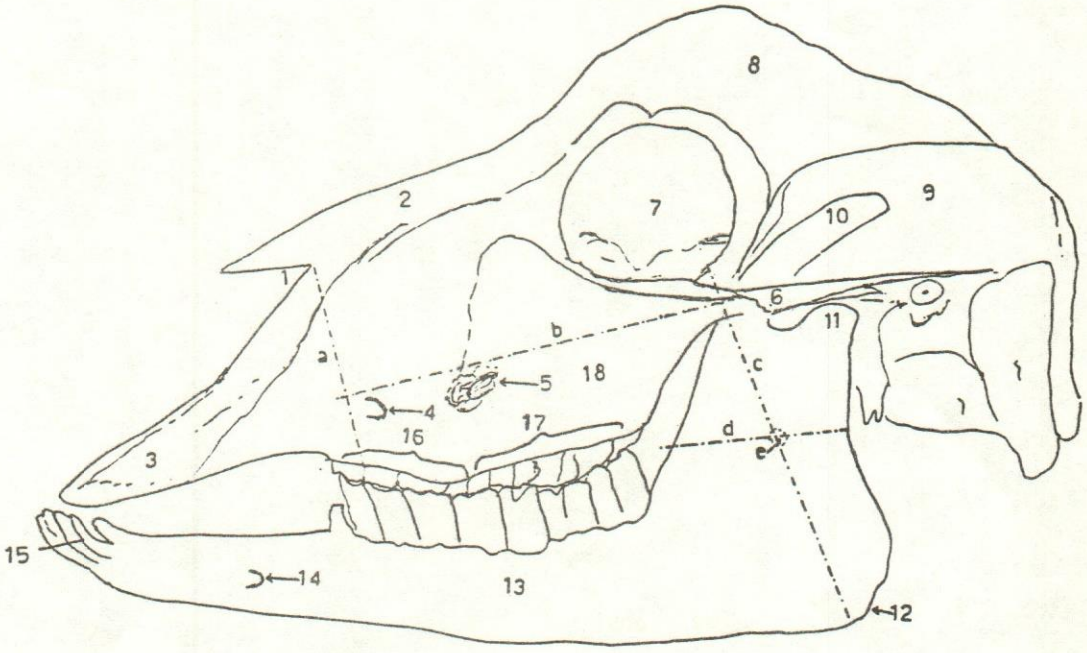
D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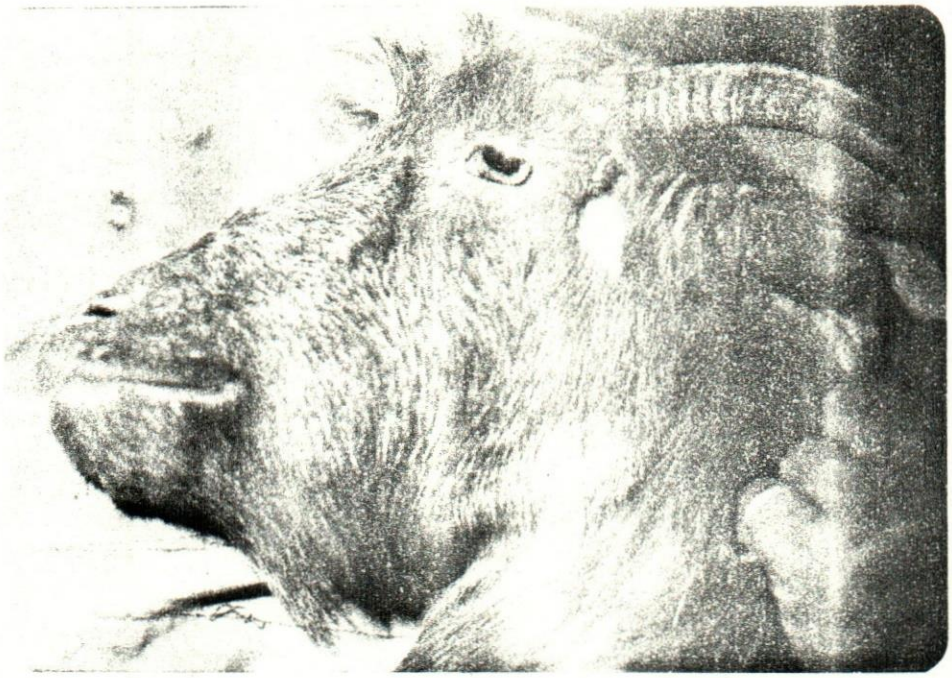

Fig. (1): Site for blocking the maxillary nerve in the goat

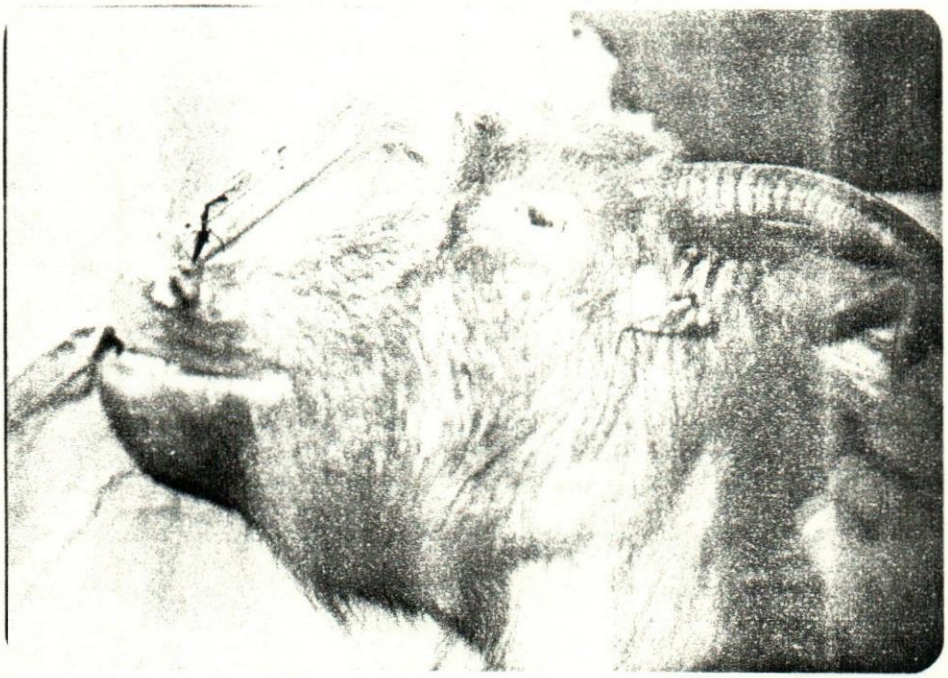

Fig. (2): Site for blocking the maxillary nerve in the goat

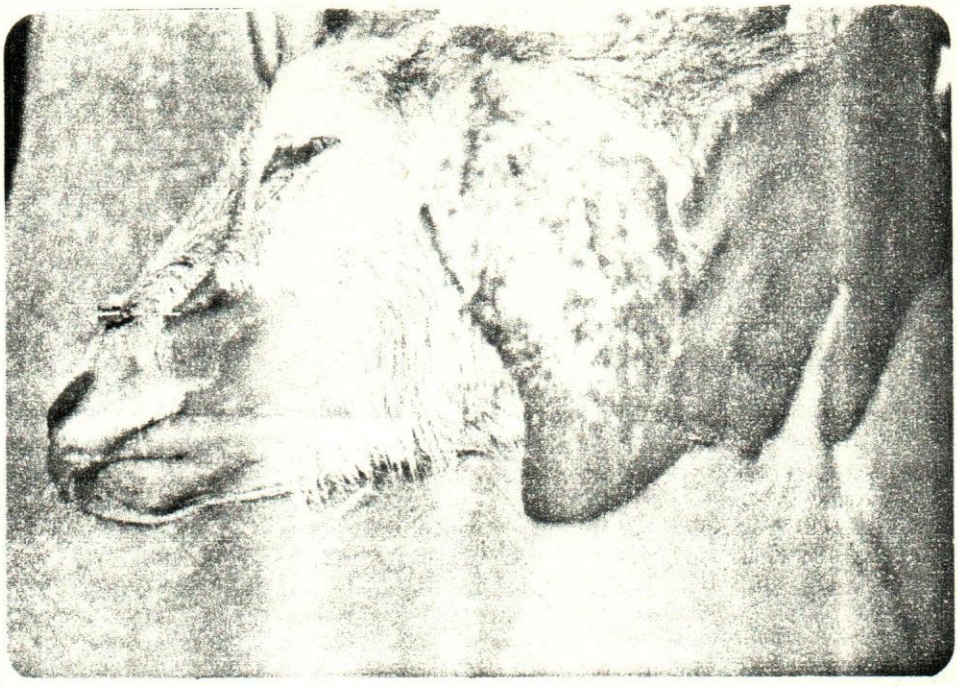

Fig. (3): Site for blocking the infra-orbital and mental nerves in the goat

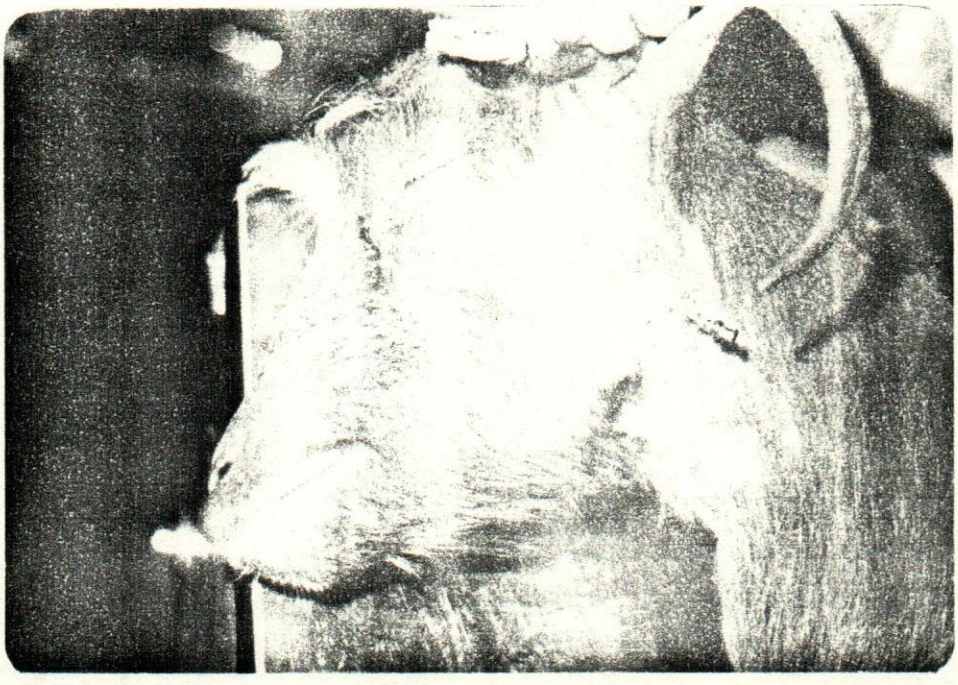

Fig. (4): Site for blocking the mandibulo-alveolar nerve in the goat