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MONSTERS IN NEWLY BORN GOATS

(With 1 Figures)

By

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التشوهات الخلقيه في الماعز حديثة الولادة

إبراهيم حسين ، نشأت صالح

تم في هذه الدراسة فحص عدد ٢ حالة تشوهات خلقيه في الماعز، كانت الحاله الأولى عبارة عن عدد ٢ أجنة أنثى ملتصقه من الصدر إبتداء من نهاية الرقبة حتى منطقة العجاج ، وكانت التشوهات الخلقيه متركزة في الجهاز الهضمي ، الدوري، البولي التناسلي والعضلي الحركي. كان الجنين المجهض المشوه الثاني عبارة عن ذكر ماعز بلدي غير مكتمل النمو وبه تشوه معقد في جميع أجزاء الجسم وخاصة منطقة الرأس . تم دراسة تاريخ كل حالة والفحص الأكلينيكي، الإشعاعي والتشريحي على التوالي.

SUMMARY

In the present study two monsters in goat were investigated. The first monster A (Diplo-thoracopagus) were females with a sternal junction which began at the root of the neck till the perineal region. The congenital defects were localized in the digestive, cardiovascular, urogenital and muscloskeletal systems. The aborted monster B was a newly born kid delivered premature with complex congenital malformations at his entire body with special reference to his head. The history, clinical, radiological and necropsy findings of the two cases were described.

Keywords: *Monsters, newly born, goats.*

A- Diplo-thoracopagus monster

A twin of female goat was brought to our veterinary clinic. History of this case revealed that it was born dead without interference.

Clinical Description

Both of the delivered twin were females with a sternal juntion. Such junction began at the root of the neck (cervical root) till the perineal region of each one (Diplo-thoracopagues) (Fig. 1). The head and neck of each one appeared normal in morphological features and size (Fig. 2). There were hyperextension of the hock joints in addition to medial deviation of the fetlock joints in one of the two foeti, while those of the other foetus were normal (Fig. 1). The external genitalia were apparently normal with presence of two teats in the inguinal region of the two foeti (Fig. 3). Atresia ani were observed in both foeti (Fig. 4). It was noticed that the fecal matter discharged from only one vulvar cleft in one foetus indicating the occurrence of congenital rectovaginal fistula.

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Radiographic feature

Dorsoventral and lateral radiographs of the diplo-thoracopagus monsters of the head, neck and thorax revealed presence of two separate vertebral column, normal skull, mandibular bone & maxilla (Fig. 5). Dorsoventral radiographs of this case at the thorax & abdomen revealed two sterni, one of them joined with the right ribs of one foetus and the left ribs of the other one (Fig. 6). One the other hand, lateral radiographs revealed that each pelvic symphysis resulted from the fusion between the pelvis of both foeti (Fig. 7).

Necropsy finding

Dissection of the skin at the thoracic & abdominal region with reflection of the forelimbs revealed normal ribs in number, configuration and articulation with the vertebrae. Concerning to the sternum, there were found two sterni. Each was attached with the right lateral thoracic wall of a foetus and the left lateral wall of the other one (Fig. 8).

Opening the thoracic and abdominal cavities showed series of malformations in the viscera. First of all, two hearts located at the thoracic inlet, which were conneted together through a common sinus venosus. One of them was relatively larger (about twice) than the other. The apex of the larger heart was formed by left ventricle, while the right and left ventricles of the smaller one reached its apex externally. Both hearts were surrounded by a single pericardium (Fig. 9). The lungs of both foeti were collapsed and apparently normal in colour and location but they were considerably small in size (Fig. 10). It was seen only a common diaphragm for both foeti (Fig. 9). Each foetus had its own oesophagus, stomach, liver, spleen and duodenum. The latter joined each other resulting in a single jejunum and ileum, double caeci, one colon and also one rectum (Fig. 11 & 12). It was observed that the faecal matter discharged from the vulvar cleft in the foetus indicating the occurrence of rectovaginal fistula. The same foetus had two kidneys with out ureters (agenesis of both ureters) bicornuated uterus with two uterine tubes and two ovaries. On the other hand the other foetus presented only one kidney with its own ureter while the other kidney failed to develop (unilateral renal agenesis). The same foetus has a urinary bladder, urethra and one uterine horn and its own Fallopian tube and ovary (Fig. 13 & 14).

B- Congenital malformations of a premature birth male goat

A newly born kid delivered premature was presented to our Veterinary clinical with complex congenital malformations at his entire body with special reference to his head.

History

A newly born aborted kid was found early morning at the stable of a previously pregnant female goat with unknown date of service and consequently unexpected date of parturition.

Clinical description

Clinical examination of the aborted kid revealed that the skin covering was considerably thin and clearly shrunken and a quadrilateral area of alopecia (baldness) was observed in the most caudal part of the dorsum of the animal

(about 3X2.5 cm). Moreover both hock joints were notably adducted, while the pes regions showed an outward deviation and were apart from each other (Fig. 15). A short tail (about 1.5 cm long) comma shaped was seen. Just below the anus a tuft of fine hair was observed resembling the hair tuft of vulva. By palpation the monster possessed an empty scrotal sac and two craniolateral displaced teats. The external opening of the prepuce was surrounded by a tuft of hair. By careful examination of the prepuce, the presence of the penis was assured (Fig. 16). This monster was aborted with strightened pelvic limbs which connected with each other by a thick fold of skin just above the tarsal articulations. The head of the monster was characterized by a short upper jaw and a long lower one (prognathia). The tongue was proturded and movable (Fig. 17). The flattened dorsal surface of the skull with the protruded mandible accepted the monster a shape of a chimpanzy-like head. The nasal bone was absent (aplasia of the nose) and the nostrils were represented by two small orifices, which communicated directly with the buccal cavity due to absence of the palatine proceses of the maxillary and incissive bones (Fig. 18). The upper and lower cheek teeth were observed. Small palpebral fissures and small deeply sunken eye balls with microphthalmia were markedly seen. At the same time, a relatively large auricles (macrotia) were observed. The sternum appeared flattened and together with the ribs were resembled an inverted "V" shape.

Radiographic examination

X-ray examination of the head region revealed the presence of short compact upper jaw, elongated lower jaw, completely developed cheek teeth buds of both jaws and regularly directed well developed incisors at the lower jaw. The distance between the two rami of the mandible was considerably wide. The radiographic examination of the chest revealed that the ribs had a horizontal direction which consequently gave the chest the inverted "V" shape appearance. In the dorsoventral view the scapular were abducted and had the appearance of the lateral position of the radiography (Fig. 19).

Necrospy findigns

Dissection of the abdominal and thoracic cavity through a longitudinal ventral midline incision revealed that all viscera inside the abdominal cavity were normal except the right testis was observed behind the corresponding kidney, while the relatively larger left one was found in the inguinal canal, both testes were connected with the scrotal wall by the gubernaculum ligament. On the other hand, the thoracic cavity showed a collapsed lung which was attached with the normal trachea and larynx. The position and morphological appearance of the heart was normal.

DISCUSSION

Developmental anomalies ordinarily originate before birth, indeed, in embryonic life, when the development of most body structures has its begining *(JONES & HUNT, 1983)*. They added that reflection on the various forms reveals that

prenatal malformations depend upon one of several different errors in the developmental mechanism. They are generally due to a single autosomal recessive gene *(SHAIK & BHUIYAN, 1977)* and can be divided into lethal and sub-lethal groups depending upon the severity of malformations *(ROBERTS, 1982)*. Diplothoracopagus monsters are conjoined twins in which the component parts are symmetrical, arised from single ovum and are monozygotic. They are joined at or near the sternal region, the internal organs are usually duplicated. The components are face to face *(ROBERTS, 1982*. Congenital malformation is not necessarily caused by any single etiological factor some congenital defects are purely genetically determined, others are caused environmental factors such as maternal medication, infection, or irradiation *(SNELL, 1983; LEIPOLD and DEMNNIS, 1986 and NOAKES, 1986)*. They added that congenital malformations appear to be a result of a complex interaction, of genetic and environmental factors. Unfortunately, previous reports describing cases similar to the present case are not available in the literature. From the available literature, the defects of the head, ear, anophthalmia and microphthalmia of cat fetuses are reported by *ELZAY and HUGHES (1969)*. Congenital abnomalities at the head of a newly born goat including hydrocephalus, cyclopia and prognathism are recorded by *ALI et al (1987)*. In addition an acephalia aprosopia were recorded by *ALI et al (1993)*. In the present record, the clinical, radiographical and necropsy findings revealed that the congenital defects were localized in the digestive, cardiovascular, uro-genital and muscloskeletal system. Concerning the digestive system of the caprine monsters, it was observed that the jejunum, ileum, colon and rectum were single indicating that agenesis (complete absence) of the endothelium and the splanchnic mesoderms of the midgut and hindgut (colon & urogenital sinus) *(RANA, 1984)*. Regarding t the presence of one urinary bladde and one rectum for the both foet could be explained by the presenc or absence of the dorsal or ventra segment which results from the septum commencing opposite the connection of allantois with the cloaca, which in normal cases forming the rectum dorsally and th urinary bladder and urogenital sinu ventrally *(EL-HAGRI, 1967)*. Concerning to atresia ani of the bo foeti, this was attributed to failure the ectoderm and endoderm of th embryo in the tail region to con together to form the anal orifices while the vice versa is ture in case the urogenital orifice (vulvar cle *(EL-HAFGRI, 1967)*. Regarding t the common sinus venosus betwe

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the two hearts of the twin monsters could be explained by the junction between both of the endocardial heart tube which originated from the two lateral limbs of the cardiogenic plate of each foeti at the seat of the sinus venosus *(RAANA, 1984).*

Anomalies of the kidney have been reported in man and many other species. Aplasia or agenesis is the most frequently reported anomaly of one or both kidneys *(JONES and HUNT, 1983).*

Facial defects mainly skeletal defects involving the craniofacial region predominate in all mammalian species especially in sheep *(Angus, 1992).* In monster B not only cleft palate was seen but also absence of the palatine processes of the maxillary and incissive bones i.e. the entire hard palate was absent. This agree with the findings of *ANGUS (1992)* who stated that cleft palate may occur as one of a group rather than as a single entity and may be under genetic control.

It can be concluded from the present study that Diplo-thoracopagus monster in newly born goat is a very rare case and it represent in cattle about once in 100.000 bovine births *(ROBERTS, 1982).*

The flattened thoracic wall of monster B which resulted from flattened sternum and ribs gave him the appearance of human chest was not recorded in our available literature.

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LEGENDS

Fig. 1: Diplo-thoracopagus female goat monster.

Fig. 2: Normal appearance of the head and neck of the both foeti. Note the seat of junction between both foeti.

Fig. 3: Two teats in the inguinal region.

Fig. 4: Atresia ani in both foeti. Note the seat of anus (small arrow) & the vulvar cleft (large arrow).

Fig. 5: Lateral radiographic picture showing two separate vertebral column, normal skull and mandibular bone.

Fig. 6: Dorsoventral radiographic picture showing two sterni, one of them joined with the right ribs of one foetus and the left ribs of the other one.

Fig. 7: Lateral radiographic picture showing each pelvic symphysis resulted from the fusion between the pelvis of the both foeti.

Fig. 8: Dorsal view of the diplo-thoracopagus after reflection of the skin & the forelimbs.Note normal ribs in number and configuration, two sterni, each attached with the right lateral thoracic wall of a foetus and the left lateral wall of the other one.

Fig. 9: Opened thoracic cavity. Note:- Two hearts connected together through a common sinus venosus.
- The apex of the large one was formed by the right & left ventricles.
- Both hearts surrounded by a single pericardium (P).
- A common diaphragm for both foeti (D).

Fig.10: Showing collapsed lung (L), two trachea and a common diaphragm (D).

Fig.11: Showing two stomach one for each foetus (S), two dudeni (Du) which joined each othe to form a single jejunum (J).

Fig.12: Showing a single ileum (IL), double caeci (CA), and one colon(CO).

Fig.13: Showing two kidneys in a foetus (small arrows) and one kidney in the other (large arrows).

Fig.14: Showing one rectum(R), one urinary bladder (UB), one ureter (UR), one urethra (UE), three ovaries(O), with three corresponding fallopian tubes and uterine horns.

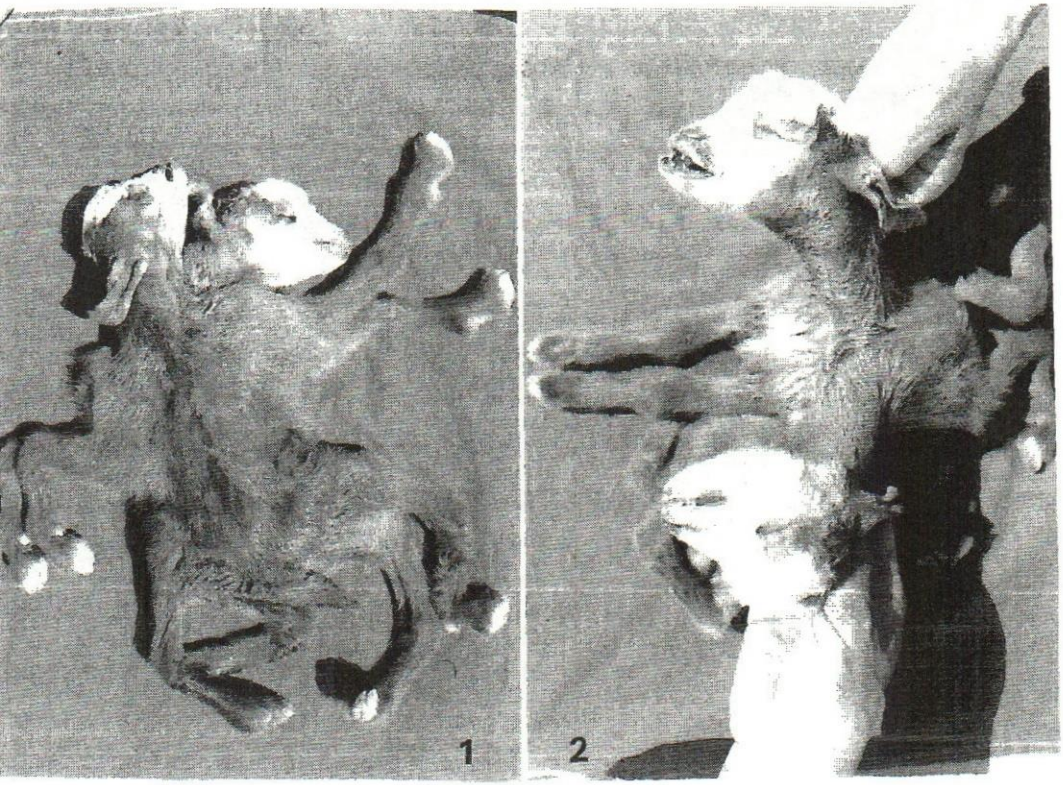
Fig.15: Aborted monster (B), Note:
- Outward deviation of the pes regions
- Shrunken skin.
- Quadrilateral area of alopecia (baldness).
- Comma shaped short tail.

Fig.16: Aborted monsyter (B) Note:
- Presence of scrotal sac, two teats, prepuce surrounded by a tuft of hair, lage auricles (macrotia) and inverted V -shape flattened sternum.

Fig.17: Monster B: Note:
- Short upper jaw and long lower one (prognathia).
- Protruded tongue.
- Chimpanzy - like head.

Fig.18: Monster B: Note:
- Absence of the palatine processes of the maxillary & incissive bones.

Fig.19: Lateral and dorsoventral radiographic picture of the head region of monster (B) showing short compact upper jaw, elongated lower jaw with a considerebly wide distance between the two rami of the mandible and horizontal direction of the ribs.



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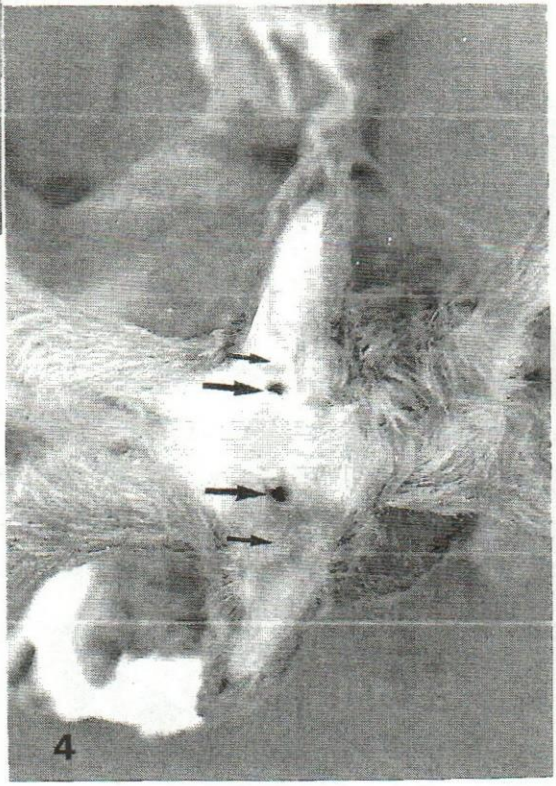

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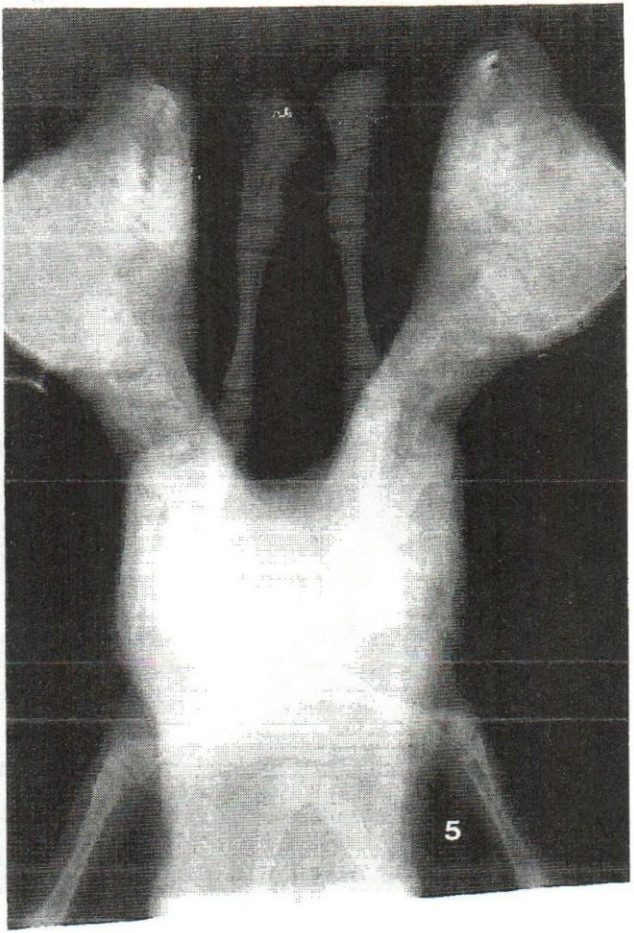
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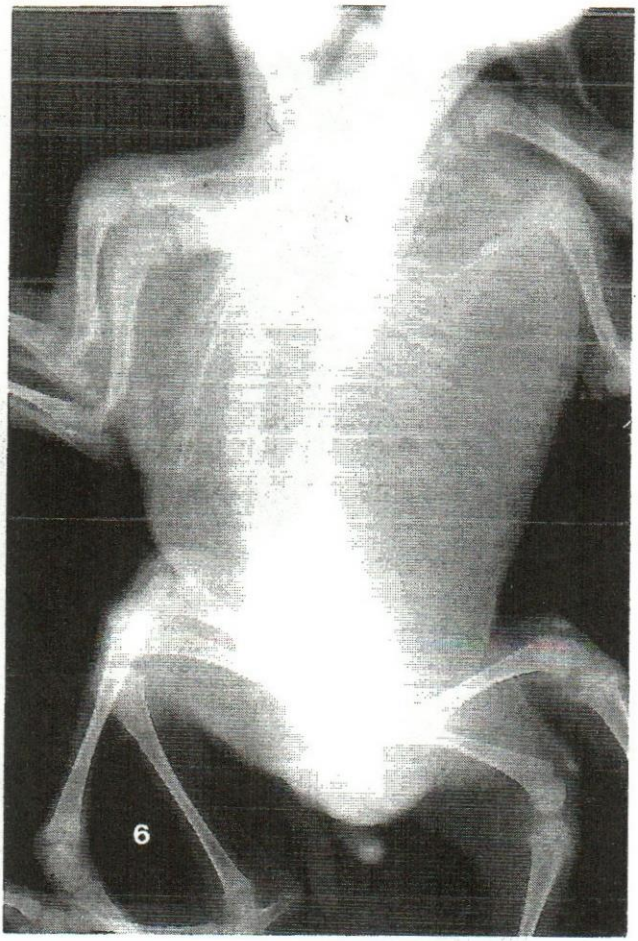
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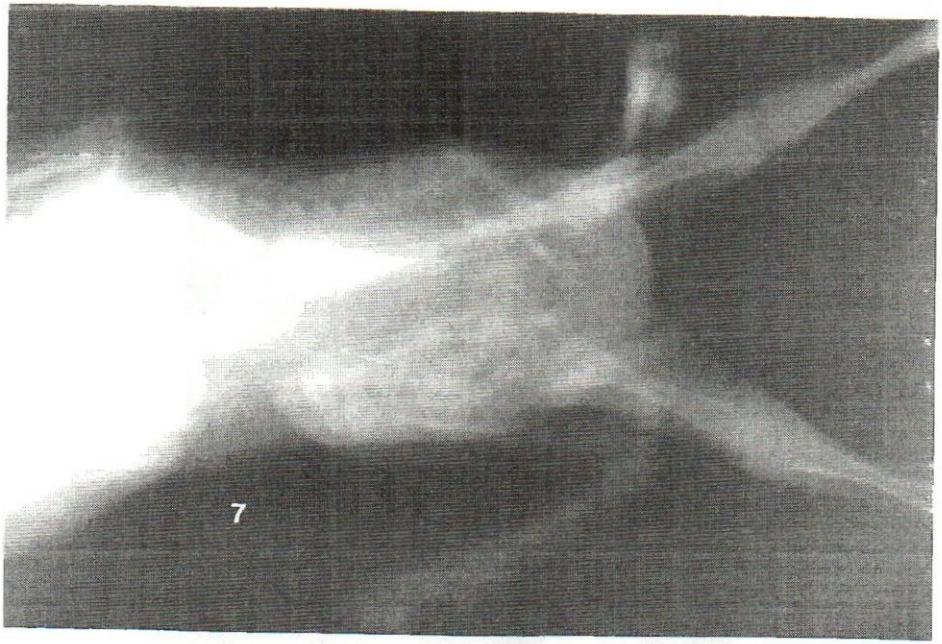
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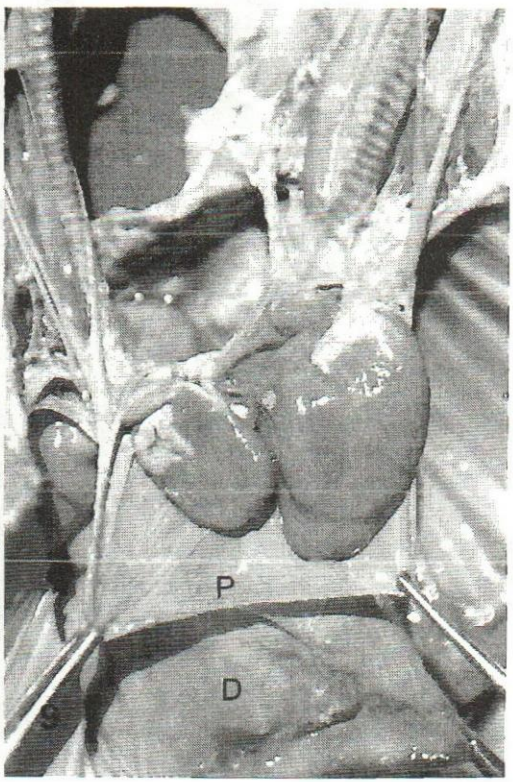
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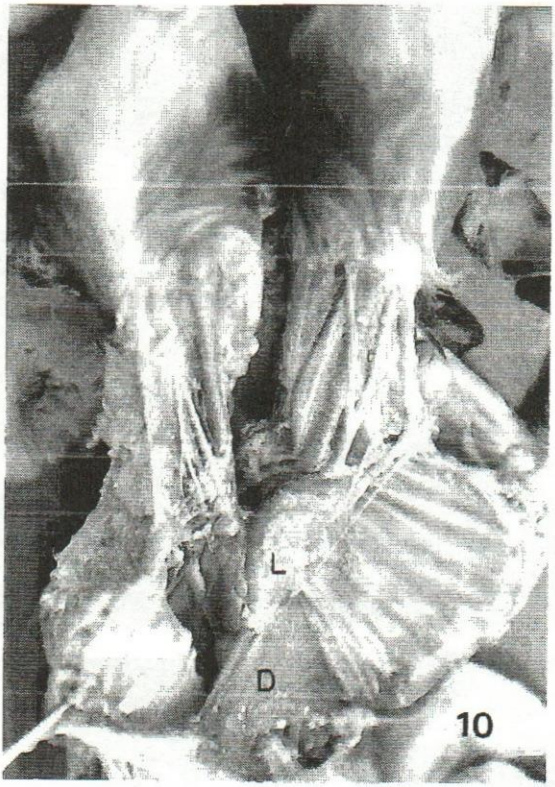
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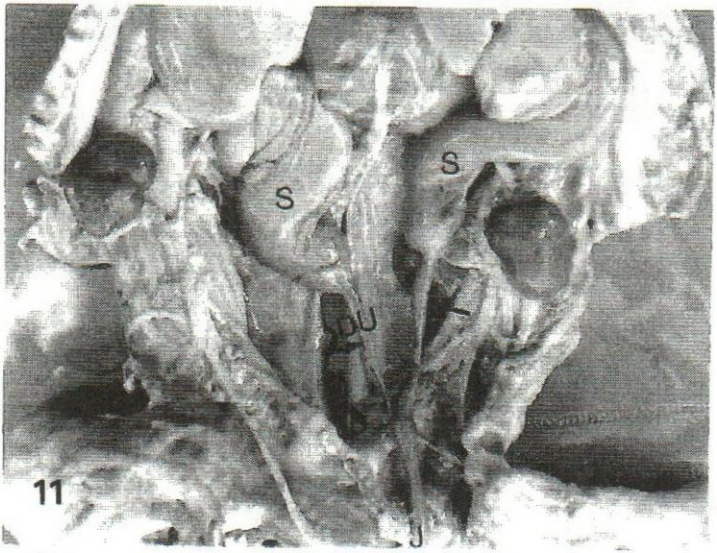
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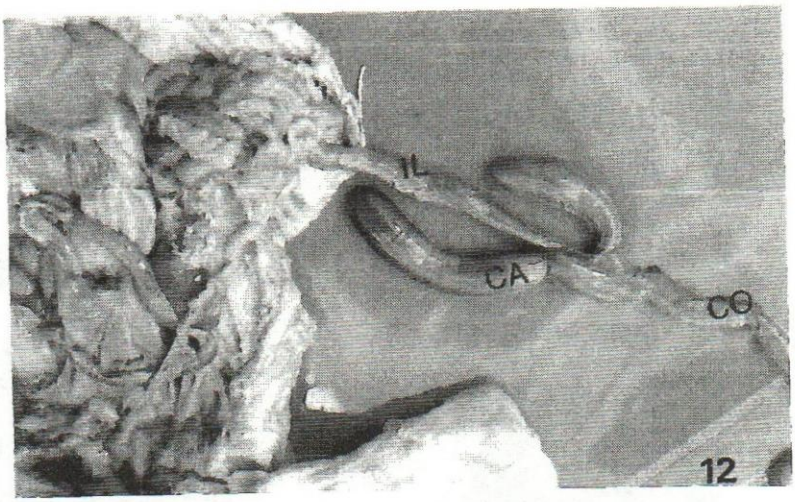
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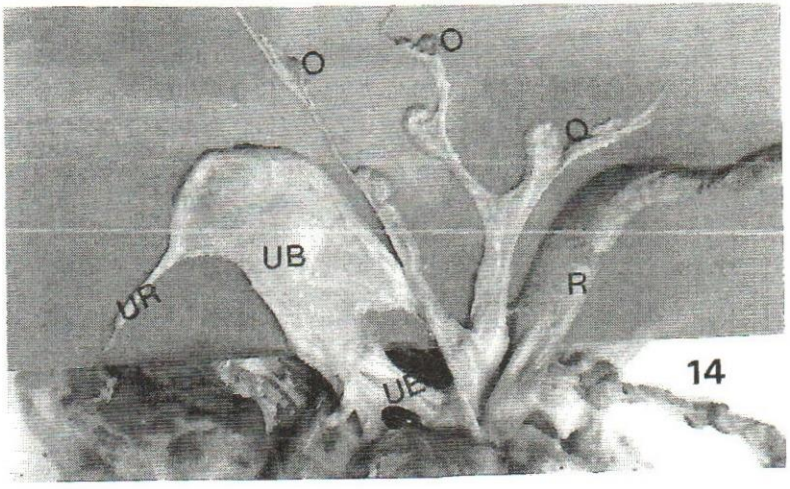
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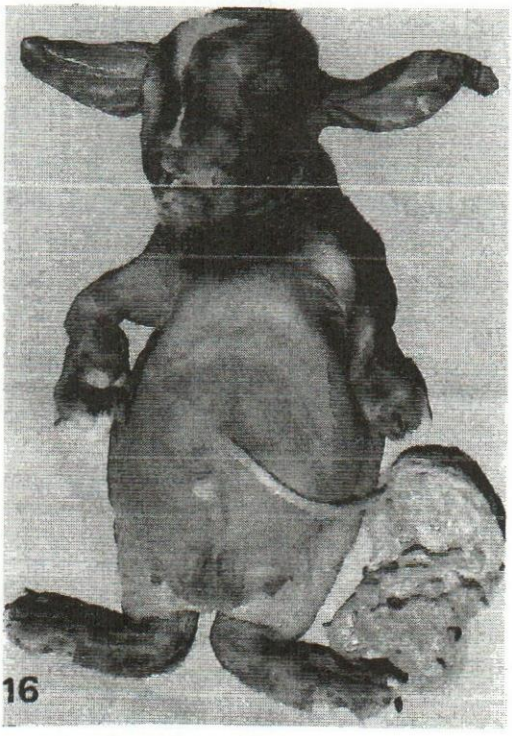

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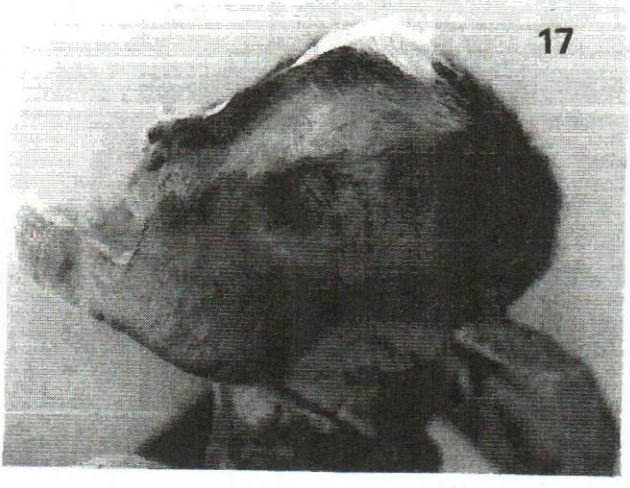

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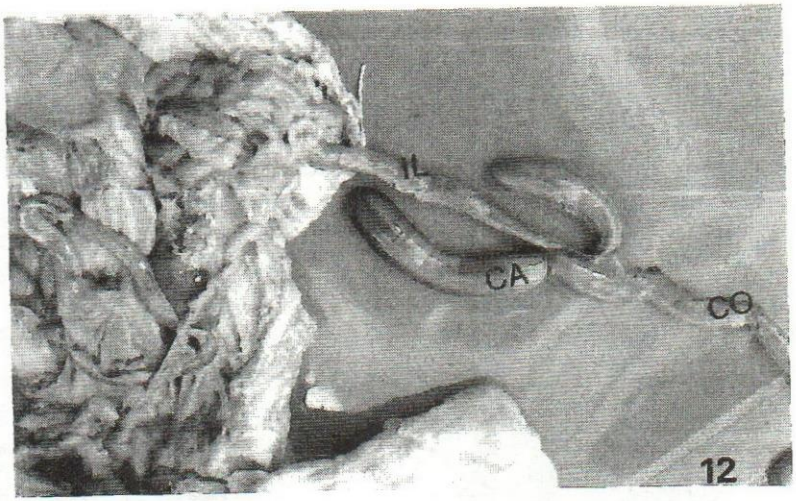
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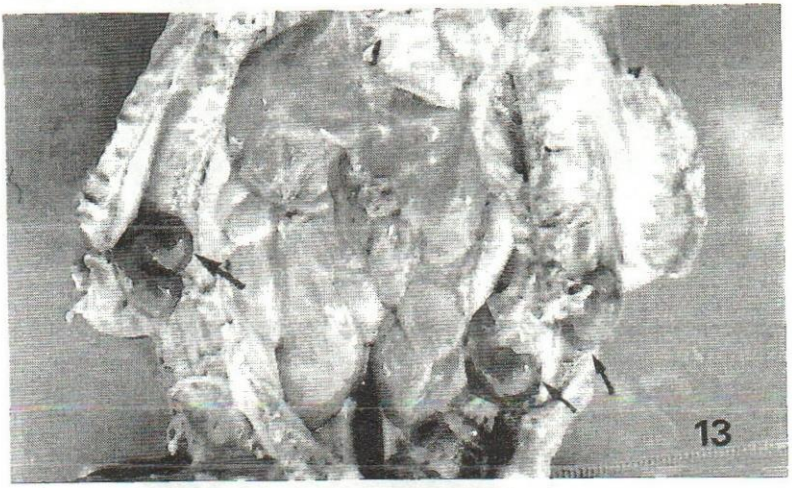
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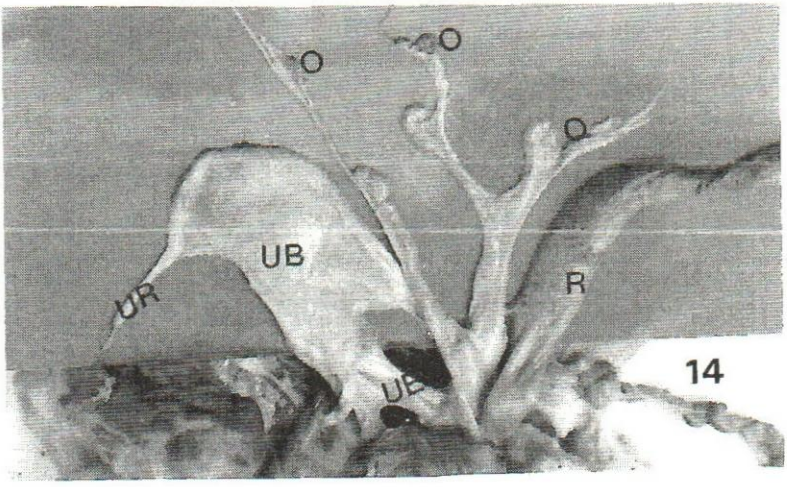
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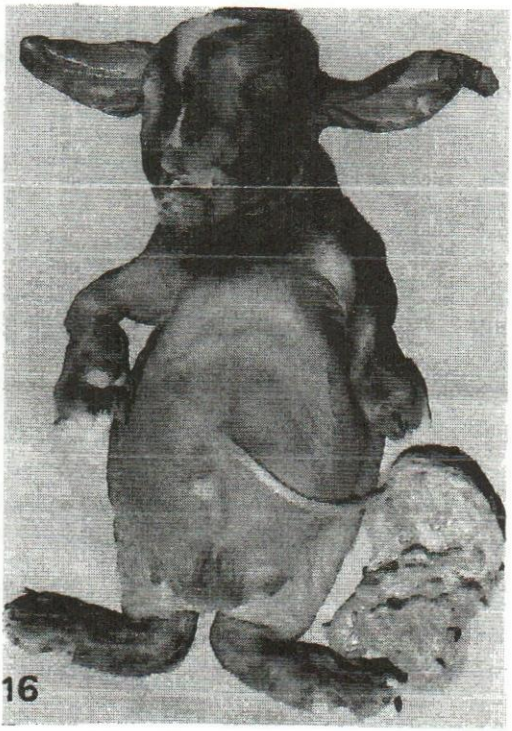

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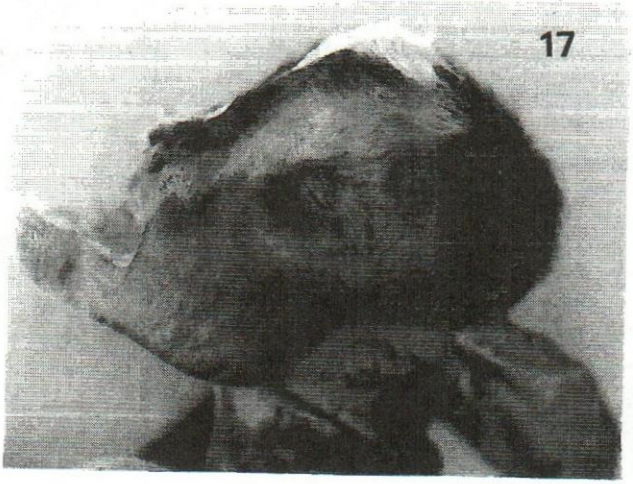

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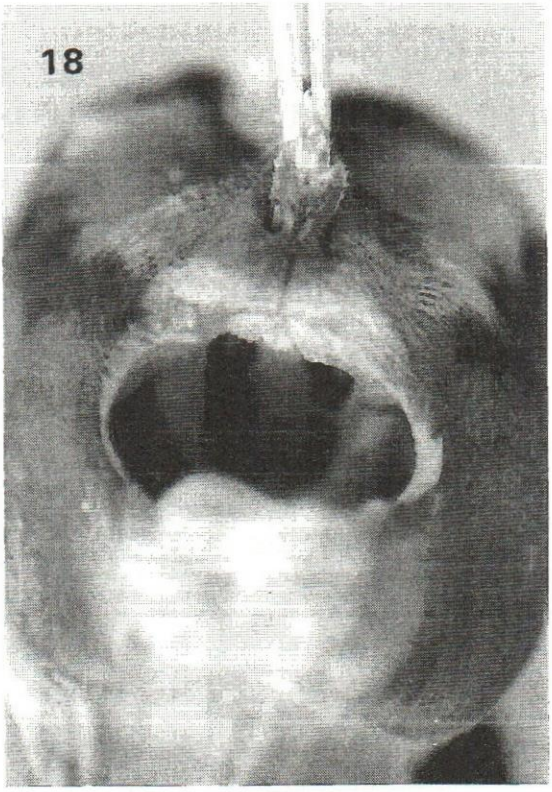
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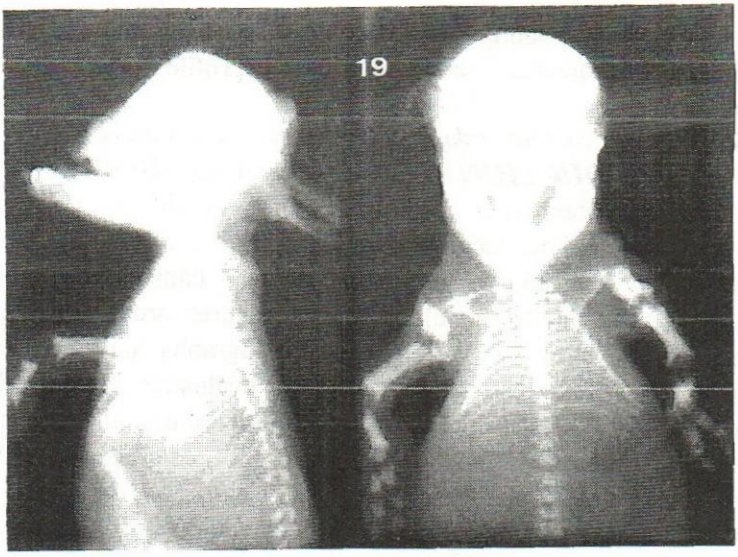
19