# RADIOLOGICAL COMPARATIVE STUDY OF THE MANDIBULAR SALIVARY GLAND BETWEEN ADULT MALE GAZELLE (SUBGUTTTUROSA) AND SHEEP(AWASSI).

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## ABSTRACT

Our radiological studyof the mandibular salivary gland was aimed to investigate the intraglandular ducts systemin both gazelle and sheep. Eight mandibular glands and three types of contras media were used.The radiological parameters wereKv. 80 , time exposure 10 msec and focus film distance 80 cm . Our result showed that the mandibular salivary gland in gazelle made up of three lobes (dorsal ,middle and ventral lobes). The duct system appeared as highly branched and the main execratory duct was made of the unitedof three lobar ducts . While in sheep, the gland made up of four lobes (cranial ,middle ,caudal and accessory) andthe mainexceratory duct formed from united offour lobar ducts.

## INTRODUCTION

The salivary glands have several functioninfood digestion , moisting of the mouth , elementary canal and producing enzyme, mucopolysacharide and glycoprotein (1), (2) and (3). Salivary gland contains antimicrobial factor (4) and (5). The major salivary gland formed of two parts , the secretary (acini) part and the conducting part (duct of system ) (6). The radiological study of the salivary gland forms an important link between the anatomy and surgery. The salivary gland and their ducts may be affected by inflammation , calculus formation and ruptures. Therefore the radiological study is important to recognize the normal intraglandular duct which helps in diagnosis abnormality and the diseases of the salivary gland (7)

and (8). Several radiological studies on the mandibular duct have done in mammals , (9) dog , (10)bovin and (11)goat . Except (12) in camel, described the intraglandular duct system of mandibular gland by 5 dosage , the first and second dosage appeared the intraglandular of execratory duct filled with contras media and some acini filled which appeared small round area . The third dosage showed that the intraglandular part of execratory duct formed from four lobar ducts (two dorsal ducts and two ventral ducts ) so the gland was made up of two lobes . At the fourth dosage, it showed more acini will filled , more branch of lobar ducts were appeared and duct system began to disappear. Lastly the fifth dosage showed filling of gland and the duct system disappear . (13) Radiological study of the mandibular salivary gland of buffalo was using several dosages , the first dosage appear filling the intraglandular part of execratory duct formed from two lobar ducts (cranial and caudal ) so the gland appear made up of two lobes . At the second dosage the contras media progressively more inside the branches of ducts .The third dosage lead to filled some acini and the cranial lobar duct appeared longer than the caudal lobar duct and it received 4-5 interlober duct . In the last dosage the contras media filled most of the gland and the duct system was disappeared .

## MATERIAL AND METHODS

Our study was done by using fresh specimen isolated from four heads of adult male (2-3) years from both clinically healthy gazelle and sheep .The gland and their duct were isolated from the head after slaughtering of the animals . Care was taken during isolating to avoid injury of gland tissue and duct.

For radiological, study several parameters were used like KV(80 ), time exposer(10 )msec, and focus film distance FFD (80 ) cm. The x-ray machine was used ( siemensgermany ). Three types of contrast media were used, (Conray 480 , Iopamiro 370 and Omnipque ).

**Injection technique**

Each gland was canulated through their execratory duct by using polyethylene pediatric intra venous cannula of 0.7 mm with catheter of 19mm and injection valve.The cannula was connected with syringe of 5ml filled with contrast media. The contras media was injected by hand under slow pressure in several dosage followed

by single radiological image (exposer )for each dosage was taken. At starting,the first dosage was (1) ml and five dosages of (0.5) ml followed by single radiograph after each dosage injection untile the intraglandular duct system completely filled with contras media and the disappear completely at last dosage .

## RESULT AND DISCUSSION

The first dosage injection in mandibular gland of gazelle (1ml) led to filled the extraglandular and intraglandularpart of mandibular duct and some gland parts, and some contras media enter the lobar ducts, dorsal middle and ventral lobar duct, so the gland made up of three lobes (Fig.1) , while in the mandibularof sheep, the first dosage led to visualized theintraglandularand extraglandularparts of mandibular duct. The contras media enter four lobar ducts accessory ,caudal ,middle and cranial lobar ducts, so the gland appear radiological made up four lobes. The accessory lobar duct entered the accessory lobe and divided into four primary ducts which divided into several secondary ducts . The caudal lobar duct was large and entered the caudal lobe. The middle was appear short in this stage .The cranial duct enter to the cranial lobe (Fig.2). .

At the second dosage,(0.5) ml was injected in mandibullar of gazelle,the total become (1.5) ml , more contras media progressive in the duct system. Many seprated lobules was filled and the primary duct was appear (Fig.3).In sheep, the second dosage showed the intraglandular duct appear as a heavy branched . The accessory lobe was appear filled the branched accessory duct. The middle lober duct appear longer. The caudal lobar duct filled with contras media reaching the secondary and tertiary duct (Fig. 4).

When we injected the third dosage (0.5) ml of contras media in gland of gazelle, the total amount become (2)ml, the contras media passed progressively and reach to two primary ducts (Fig .5). While the mandibular gland in sheep at the third dosage filled the accessory lobe and more branches of all duct filled with media (Fig.6).

The fourth dosage injected (0.5) ml of contras media injection in gazelle, the total amount become (2.5) ml , appeared the contras media passed more upward in the duct system to increase filling of lobules of ventral lobar duct (Fig.7). While in sheep the

contras media filled the accessory lobe and its duct was disappear , more contras mediapassed into middle and caudal lobar ducts through their branches and reached theperipheral side of gland(Fig.8).

Thefifth dosage (0.5) ml injection the total amount become (3)ml , the mandibular gland of gazelle showed the contras media advanced moving in the secondary duct , reached the peripheral of gland and large area of gland filled with contras media (Fig .9).While in sheep mandibular gland appeared that the contras media reached the peripheral lobules and intraglandular duct system started disappear. The result appear completely filling of the accessory lobe (Fig.10).

At last (sixth dosage) with total amount become (3.5) ml , the gland in gazelle appearedas white area and completely disappeared of the duct system (Fig.11). In sheep, at sixth dosage, mandibular gland showed similar as in gazelle ( the intraglandular duct system was disappear and the gland appear as white area) (Fig. 12).

The result of radiological study showunsimilarties between mandibulargland of gazelle and sheep which made up of three lobes with three lobar ducts in gazelle and four lobes with four lobar ducts in sheep. This was also differ from the result of (13) in buffalo which made up of two lobes with two lobar ducts .

The result in sheep was similar to result of (12) in camel which made of four lobes and four lobar ducts, while result of gazelle was unsimilar with (12) in camel.Usually the differenceoccurred due to different species.

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**Fig.1:.**Radiographical image of mandibular gland of gazelle shows: 1. Extraglandular duct 2.intraglandular duct 3. dorsal lobar duct . 4. Middle lobar duct. 5.ventral lobar duct.

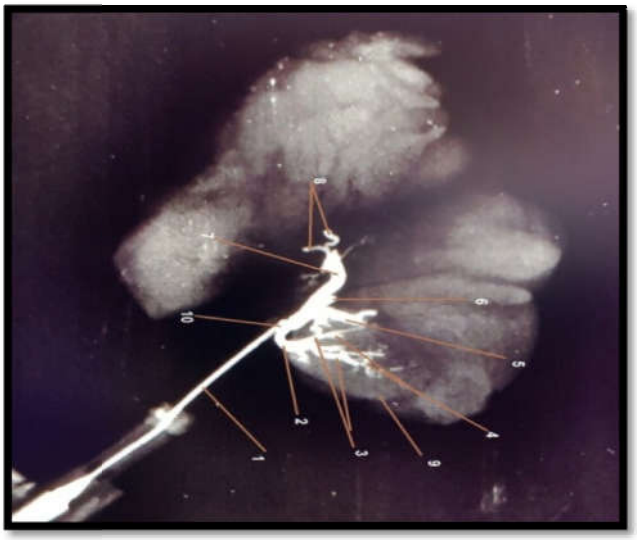

**Fig.2**:.Radiographical image of mandibular gland of sheep shows: 1.mandibular duct 2.accessory lobar duct. 3.primary duct of the accessory lobar duct 4.secondary duct of the accessory lobar duct 5.cranial lobar duct 6.short middle lobar duct 7.caudal lobar duct 8.primary duct of the caudal lobar duct 9.accessory lobe. 10.intraglandular duct.

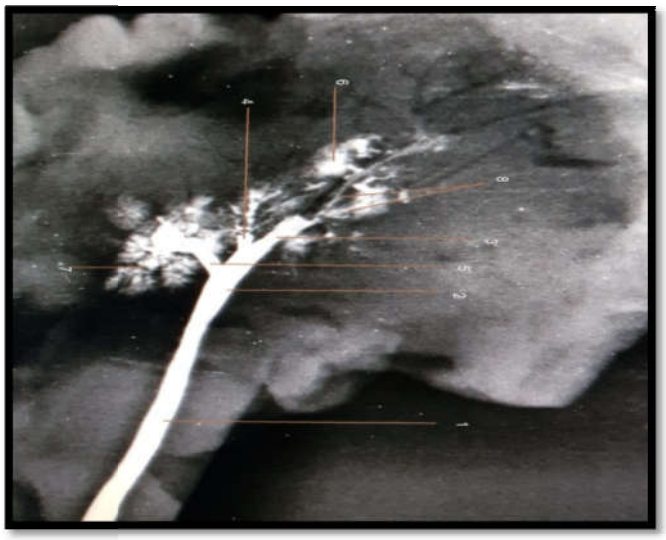

**Fig.3:**Radiographical image of mandibular gland of gazelle shows: 1. Mandibular duct 2. Intraglandular duct . 3. Dorsal lobar duct4. Middle lobar duct 5.ventral lobar duct. 6. filled lobule of the dorsal duct 7.filled lobule of the ventral duct. 8.primary branch(duct).

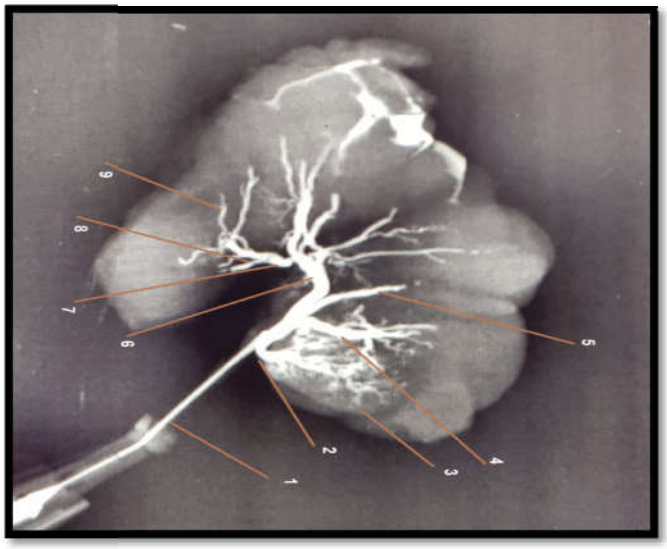

**Fig.4:** Radiographical image of mandibular gland of sheep shows: 1.mandibular duct 2.accessory lobar duct. 3. accessory lobe 4..cranial lobar duct 5. middle lobar duct 6.caudal lobar duct 7.primaryduct(branch) of the caudal lobar duct 8.secondary duct(branch ) of caudal lobar duct 9.tertiary duct of caudal duct.

**Fig.5:.**Radiographical image of mandibular gland of gazelle shows: 1. Mandibular duct 2. Intraglandular duct . 3. Dorsal lobar duct4. Middle lobar duct 5.ventral lobar duct. 6. filled lobule of the dorsal duct 7.filled lobule of the ventral duct. 8.primary branch(duct).

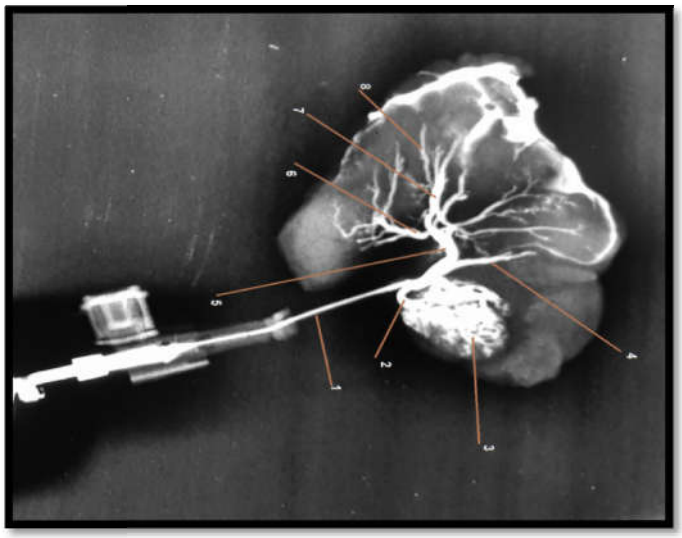

**Fig.6:** Radiographical image of mandibular gland of sheep shows: 1.mandibular duct 2.accessory lobar duct. 3. accessory lobe 4.. middle lobar duct 5. caudal lobatr duct 6.primary duct(branch) of the caudal lobar duct 7.secondary duct(branch ) of caudal lobar duct 8.tertiary duct of caudal duct.

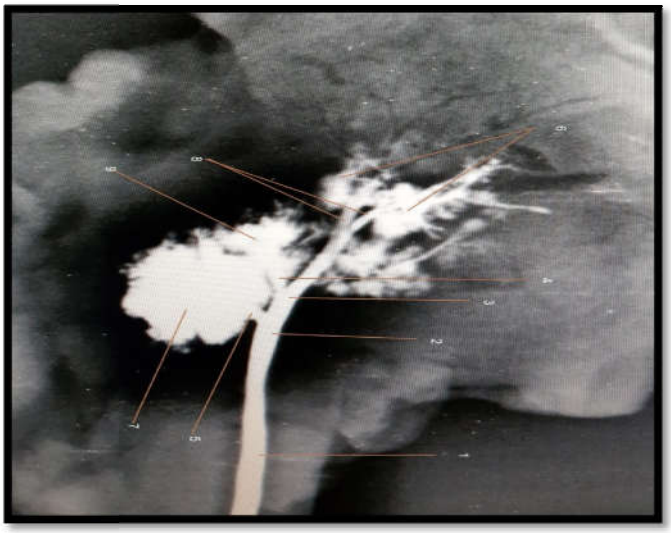

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**Fig.7:.**Radiographical image of mandibular gland of gazelle shows: 1. Mandibular duct 2. Intraglandular duct . 3. Dorsal lobar duct4. Middle lobar duct 5.ventral lobar duct. 6. filled lobule of the dorsal duct 7.filled lobule of the ventral duct. 8.primary branch(duct) 9. filled lobule of the middle duct.

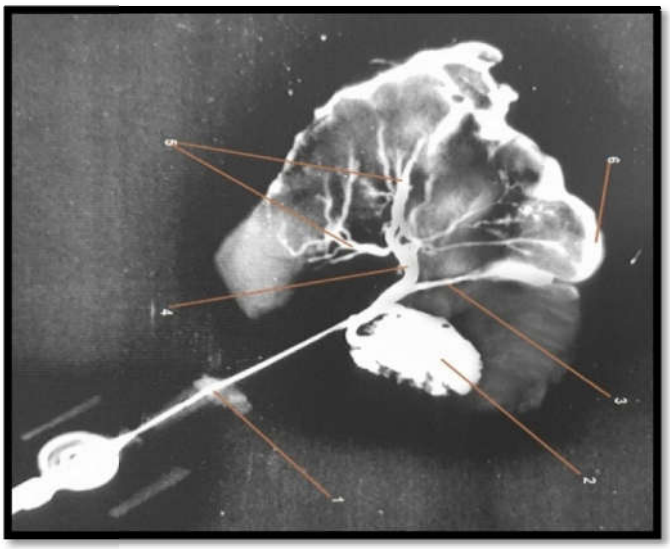

**Fig8.**: Radiographical image of mandibular gland of sheep shows: 1.mandibular duct 2.filled accessory lobe 3.. middle lobar duct 4. Caudal lobar duct 5. Branched of the caudal lobar duct 6.contras media filled the peripheral part of mandibular gland.

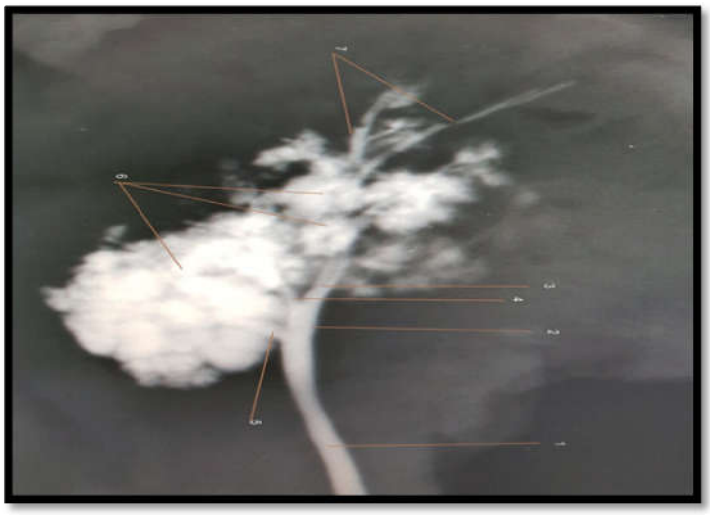

**Fig. 9:.** Radiographical image of mandibular gland of gazelle shows: 1. Mandibular duct 2. Intraglandular duct . 3. Dorsal lobar duct4. Middle lobar duct 5.ventral lobar duct.6. filled lobule of gland 7.secondary branch(duct).

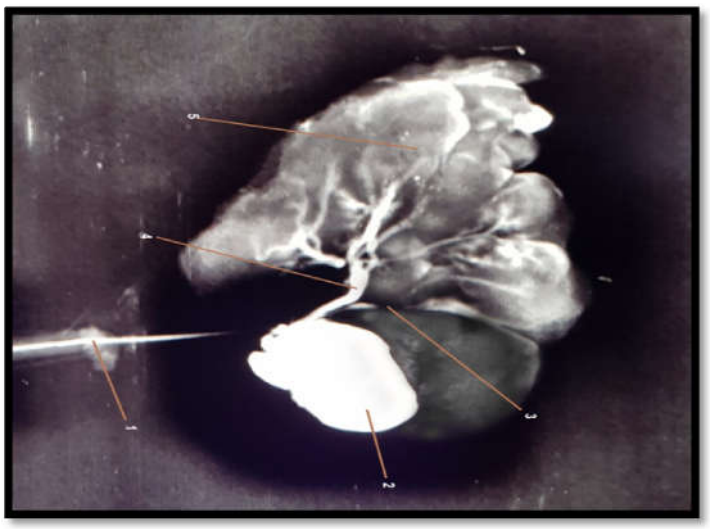

**Fig.10:.** Radiographical image of mandibular gland of sheep shows: 1.mandibular duct 2.filled accessory lobe 3.. middle lobar duct 4. caudal lobar duct 5.filled gland.

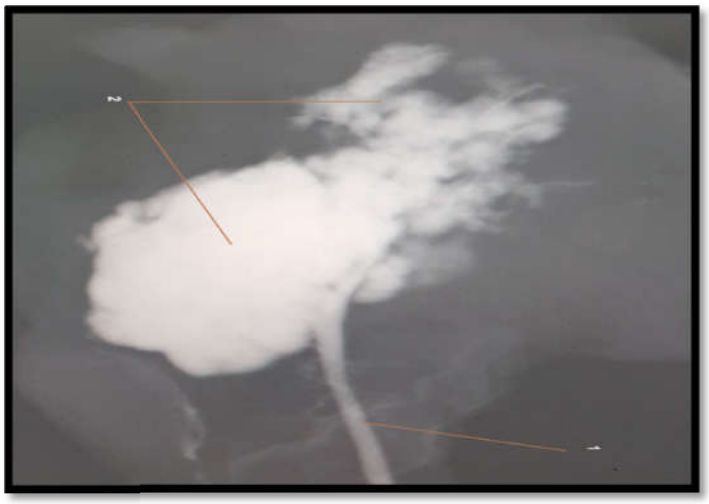

**Fig.11:** Radiographical image of mandibular gland of gazelle shows: 1. Mandibular duct 2. Filled glandular duct ( disappear intraglandular duct system).

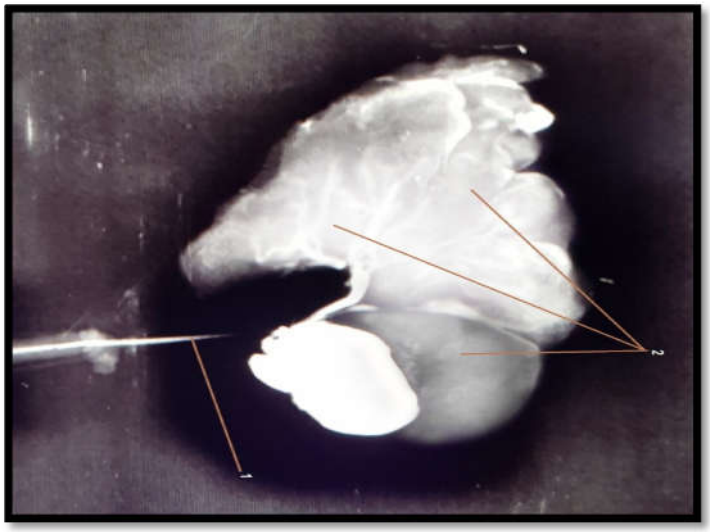

**Fig.12:** Radiographical image of mandibular gland of sheep shows: 1.mandibular duct 2.complet filled gland.

# دراسة مقارنة إشعاعية للغدة اللعابية الفكية بين غزال الذكر البالغ والأغنام

محمد صلاح حسن سماوي مهدي عبد الكريم عطيه

**الخلاصه**

استهدفت الدراسة الإشعاعية في الغدة اللعابية الفكيه فحص نظام القنوات داخل الغده في الغزال والأغنام. تم استخدام ثمانية غدد وثلاثة أنواع من وسائط الكونترا. المعلمات الإشعاعية كانت ٨٠ كيلوفولت ، وقت التعرض ١٠ ميللي ثانية و مسافة تركيز الفلم ٨٠ سم. وأظهرت النتائج ان الغدة اللعابية الفكيه في الغزال مكونة من ثلاثة فصوص (ظهري ، وسطي وبطني). يظهر نظام القنوات الداخلي على شكل تشعب كبير ، وتتكون القناة الرئيسيةالاساسيه من اتحادثلاث قنوات فصيه ، بينما تتكون الغدة في الأغنام من أربعة فصوص (القحفية ، الوسطية ، الذيلية ، التبعية) ، وتتكون القناة الرئيسيةالاساسيه من أربعة قنوات فصيه.

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