

**COMPARATIVE RADIOLOGICAL STUDY OF THE  
INTRAGLANDULAR DUCTS SYSTEM OF PAROTID SALIVARY  
GLAND OF ADULT MALE INDIGENOUS  
GAZELLE(SUBGUTTUROSA) AND SHEEP(AWASSI).**

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**ABSTRACT**

The present study was aimed to investigate the intraglandular duct system pattern in parotid salivary gland in both gazelle and sheep . Eight parotid glands were used , three type of kontras media were used, and some radiological parameters Kv. 80 , time exposure 10 msec with focus film distance 80 cm . The radiological results showed that the parotid salivary gland in gazelle made up of five lobes , the intraglandular duct system appear as highly branched, and the main excretory duct formed inside the gland by union of five lobar duct , while in sheep the gland appear formed from three lobe and main duct formed from three lobar duct inside the gland .

**INTRODUCTION**

The parotid salivary glands in ruminants were the largest salivary glands in the body . It consider as multifunctional organ of several important digestive , protective excretory and endocrine functions (1).In ruminant the saliva supplied by parotid salivary gland which secreted rapidly and continuously (2). Saliva was essential factor for microbial growth and regulation digestion in fore stomach (3). In general, the ruminants secrete large volume of alkaline and well buffered saliva (4). The

salivary glands consist of two parts , the secretory (acini) and transport duct (5,6). The sialograph (radiological study) of the intraglandular duct system gives the data of normal pattern of intraglandular duct to help in diagnosis of the abnormalities or calculus treatment and rupture of duct(7,8) .

Many radiological studies were done on the parotid salivary gland in different animals. (9) In camels,intraglandular duct system consists of four lobar ducts three of them are dorsally and the fourth one is ventrally, they united inside the gland to form the excretory duct .(10) Radiological study of parotid salivary gland in buffalo shows the gland made up of four lobes and the excretory duct wich formed inside the gland by unities of three dorsal lobar ducts and one ventral lobar duct .Most of other radiological studies focused on the course of the parotid duct (11) in bovine , (12) in sheep ,(13) in goat and (14) in horse.

## **MATERIAL AND METHODS**

This study was done on eight grossly healthy appearance specimens (gland and their duct). Isolated from four heads of adult male (2-3) years of gazelle and sheep . Immediately after slaughtering of the animals, extra care was taken in isolating of gland and their ducts to avoid any injury may be occur to the gland tissue and duct. Some parameters for radiological study were used 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).

### **Injectiontechnique**

Polyethylene pediatric intra venous cannula of 0.7 mm with catheter of 19mm was inserted to the excretory duct ineach gland . The cannula was linked with syringe of 5ml filled with contrast media and injected under slow pressure by hand . The contrast media was injected by 6 dosages , the first dose was (1) ml and the other doseswere of (0.5) ml . Single radiological image was taken after each dose.

## **RESULTS AND DISCUSSION**

In gazelle, the first dosage of (1ml) the contrast media was passes through the extraglandular duct and part of intraglandular duct which appear long and curved

received of five tributaries (five lobar ducts) three dorsal ducts and two ventral ducts, each lobar duct was divided into two primary ducts, so the gland appears as formed from five lobes (Fig.1). In sheep, at first dosage injected of contrast media, which passed into the extraglandular and intraglandular part of parotid duct and formed from three lobar ducts (small dorsal lobar, middle lobar duct was large and ventral lobar duct). So the gland appearance formed from three lobes, the dorsal lobe sent two small lobular ducts, the middle lobe was large and sent five lobular ducts, and the ventral sent two lobular ducts (Fig.2).

At second dosage (0.5) ml, the total dosage became (1.5) ml, the contrast media passed more advanced and more lobules of parotid salivary gland of gazelle were filled (Fig.3). In sheep, the second dosage of contrast media was reached the secondary and tertiary ducts and more lobules were filled (Fig.4).

At third dosage (0.5) ml injected in parotid gland of gazelle, the total amount became (2) ml, the contrast media passed advanced and the secondary branches of duct system became more clear (Fig.5). At the same dosage injected in sheep parotid, the contrast media passed to reach the peripheral of gland and more lobules were filled (Fig.6).

At the level of fourth dosage (0.5) ml with total dosage became (2.5) ml, in parotid salivary gland of gazelle the contrast media reached to appear the secondary branched and more lobules were filled (Fig.7). In the same level of dosage injected in parotid salivary gland of sheep, the contrast media filled more lobules and small tertiary and secondary branches duct disappear (Fig.8).

When more amount of contrast media injected at the fifth dosage the total became (3) ml in parotid gazelle there is increase area of lobule filled with contrast media and the intraglandular duct system start to disappear (Fig.9). The parotid salivary gland in sheep at the same level (fifth dosage) most of gland and intraglandular duct were filled (Fig.10).

At the last dosage (six dosage) of (0.5) ml with total became (3.5) ml, in parotid of gazelle, the contrast media filled most of glandular lobules and the intraglandular duct system complete disappear (Fig.11). The parotid salivary gland of sheep at the same

level of dosage appeared as white area and the intraglandular duct system disappeared (Fig.12) .

From our result, there is difference between gazelle and sheep. Gazelle made up of five lobes and has five lobar ducts while in sheep the gland made up of three lobes and has three lobar ducts .The difference usually due to species difference . Both gazelle and sheep were differed from that in camel (9) and in buffalo (10) which their gland appearance made up of four lobes with four lobar ducts , this is may be also due to species difference.

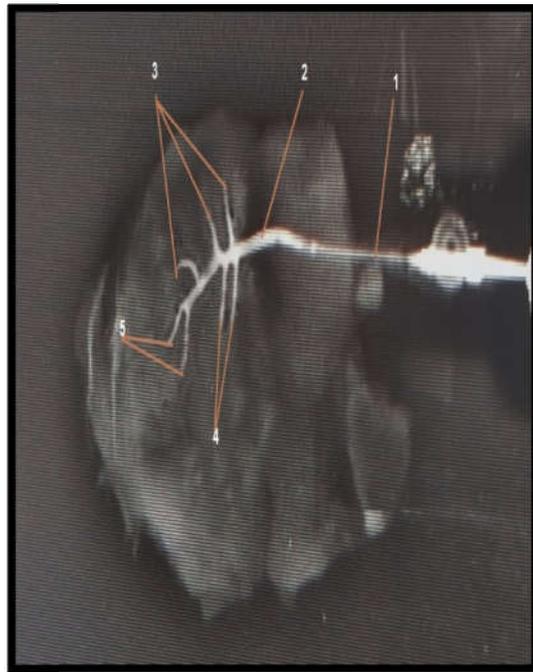


Fig.1.Radiographical image of parotid gland of gazelle. shows: 1.parotid duct(extraglandular duct) 2. intraglandular duct 3.. dorsal lobar duct 4. ventral lobar duct 5.primary branch.

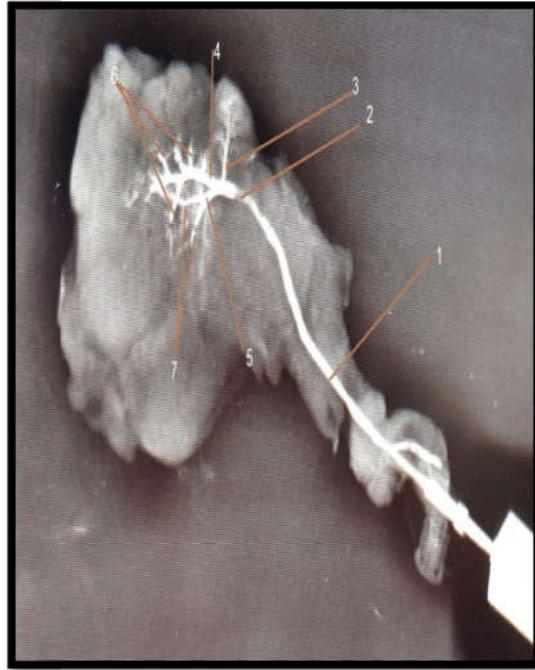


Fig.2.Radiographical image of parotid gland of sheep shows: 1.extraglandular parotid duct 2.intraglandular parotid duct 3. Dorsal lobar duct 4.middle lobar duct 5.ventral lobar duct 6. Lobular duct(primary) of middle lobar duct 7. Lobular duct(primary) of ventral lobar duct.

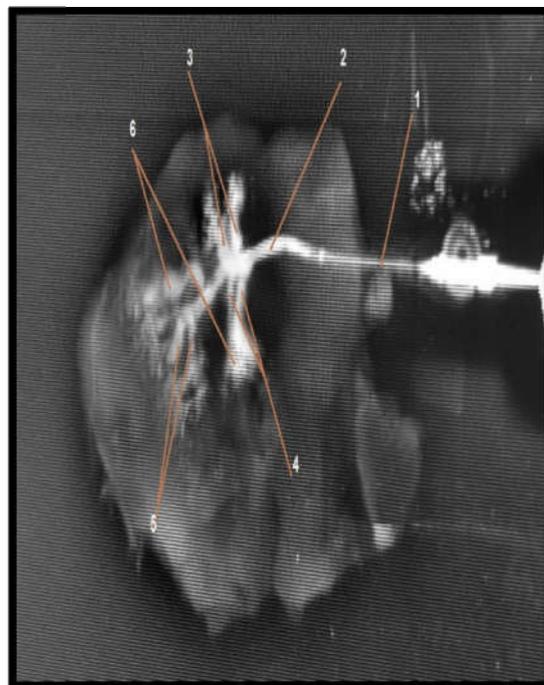
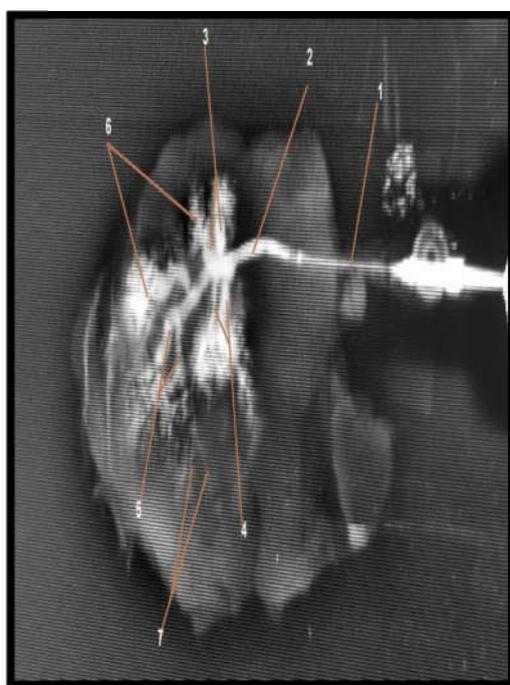


Fig.3.Radiographical image of parotid gland of gazelle. shows: 1.parotid duct(extraglandular duct) 2. intraglandular duct 3.. dorsal lobar duct 4. ventral lobar duct 5.primary branch. 6.area of lobular filled with contras media.



**Fig.4.**Radiographical image of parotid gland of sheep shows: 1.extraglandular parotid duct 2.intraglandular parotid duct 3. Dorsal lobar duct 4.middle lobar duct 5.ventral lobar duct 6. Filled lobe of dorsal lobar duct 7. Secondary branch 8. Tertiary branch.



**Fig.5.**Radiographical image of parotid gland of gazella shows: 1.parotid duct(extraglandular duct) 2. intraglandular duct 3.. dorsal lobar duct 4. ventral lobar duct 5.primary branch. 6.area of lobular filled with contras media. 7.secondary branch.

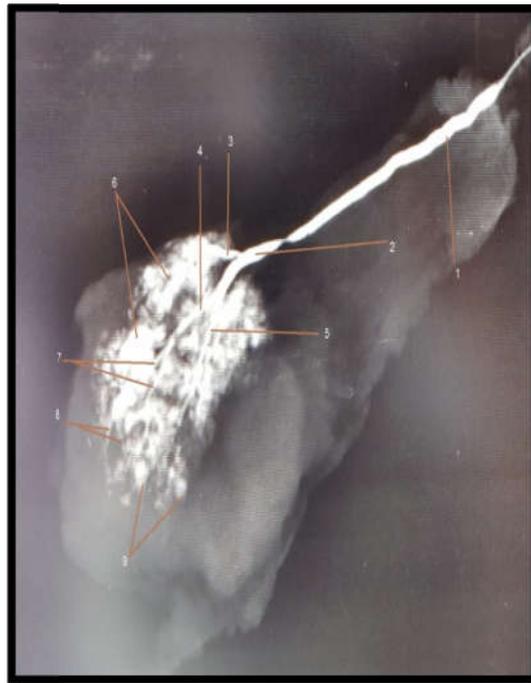


Fig. 6. Radiographical image of parotid gland of sheep shows: 1. extraglandular parotid duct 2. intraglandular parotid duct 3. Dorsal lobar duct 4. middle lobar duct 5. ventral lobar duct 6. Filled lobe of gland 7. Secondary branch 8. Tertiary branch. 9. Isolated glandular branch.

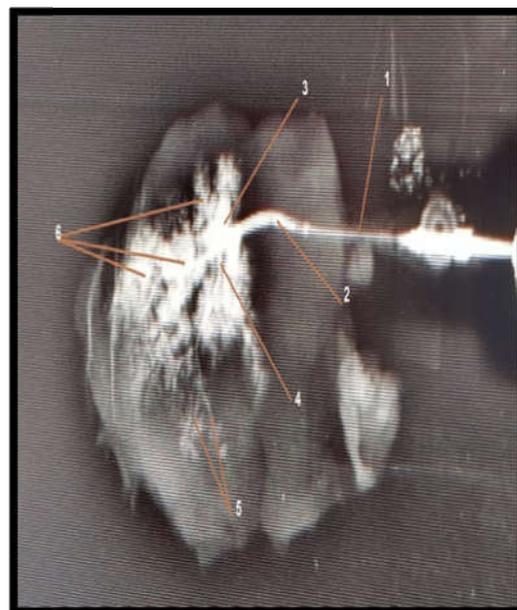


Fig.7. Radiographical image of parotid gland of gazella shows: 1. parotid duct (extraglandular duct) 2. intraglandular duct 3. dorsal lobar duct 4. ventral lobar duct 5. secondary branch. 6. area of lobular filled with contrast media.

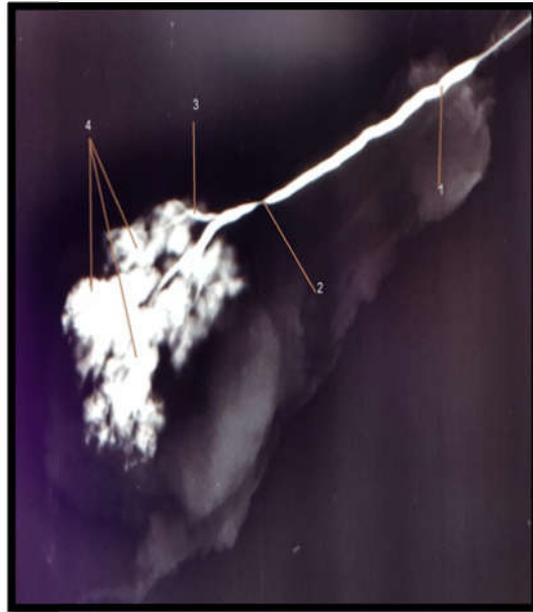


Fig.8.Radiographical image of parotid gland of sheep shows: 1.extraglandular parotid duct 2.intraglandular parotid duct 3. dorsal lobar duct 4 .filled lobules of gland .

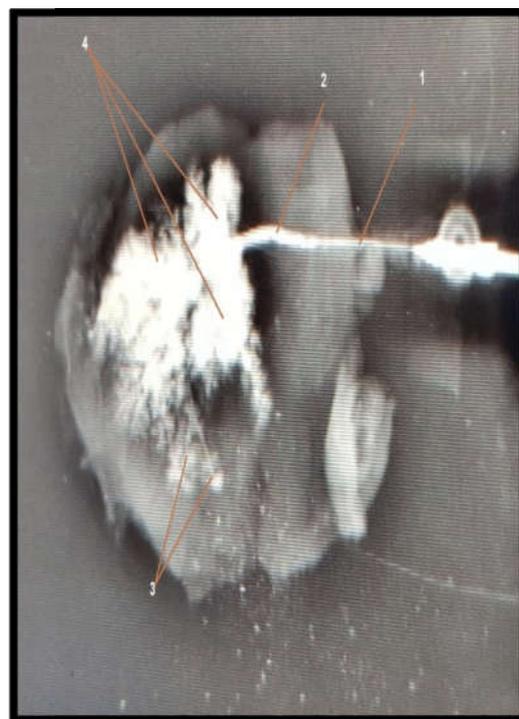


Fig.9.Radiographical image of parotid gland of gazelle shows: 1.parotid duct(extraglandular duct) 2. intraglandular duct 3..secondary branch. 4.area of lobular filled with kontras media.



Fig.10.Radiographical image of parotid gland of sheep shows: 1.extraglandular parotid duct

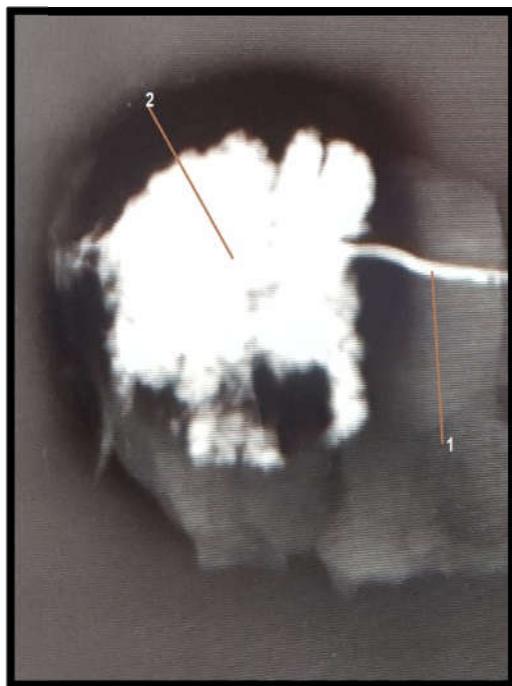


Fig.11.Radiographical image of parotid gland of gazelle shows: 1.parotid duct(extraglandular duct) 2. Filled gland.

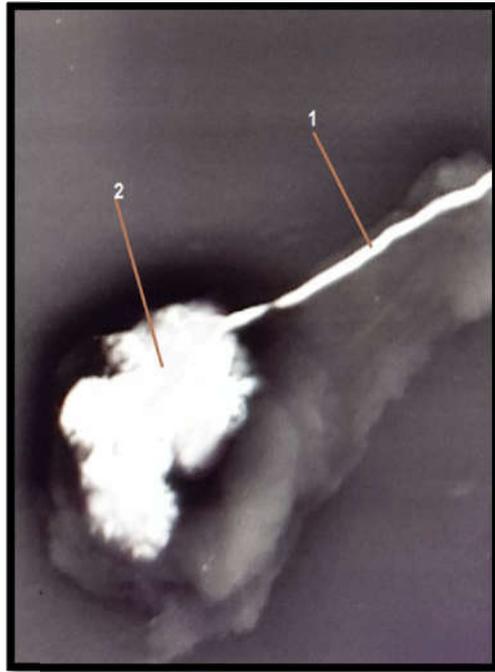


Fig.12.Radiographical image of parotid gland of sheep shows: 1.extraglandular parotid duct 2 .filled gland.

### دراسة إشعاعية مقارنة للقنوات داخل الغدة اللعابية النكفية في ذكور الغزال البالغ والأغنام المحلية.

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#### الخلاصة

تهدف الدراسة الإشعاعية الحالية إلى دراسة نمط نظام القنوات داخل الغدة النكفية اللعابية في كل من الغزال والأغنام. تم استخدام ثمانية غدد النكفية ، واستخدمت ثلاثة أنواع من وسائل الكونترا ، وبعض المعلومات الإشعاعية ٨٠ كيلوفولت، وقت التعرض ١٠ ميلي ثانية ومسافة تركيز الفيلم ٨٠ سم. أظهرت النتائج الإشعاعية الغدة اللعابية النكفية في الغزال مؤلف من خمسة فصوص ، حيث ظهر نظام القنوات داخل الغدة عالية التفرع ، وتشكلت القناة الأساسية الرئيسية داخل الغدة عن طريق اتحاد خمسة قنوات . بينما في الاغنام تظهر الغدة من ثلاثة فصوص والقناة الرئيسية تتكون من ثلاثة قنوات فصية داخل الغدة.

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