

## Case Report

# True Hermaphroditism in a Goat – A case report

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## ABSTRACT

A four-month-old prepubertal female goat was presented to RVP IVRI Bareilly, with the history of an abnormal growth in the vulva. On clinical examination the growth was found as prominent clitoris, and two peanut sized soft structures were palpable at the subcutaneous in inguinal region. Transabdominal B mode real time ultrasound of inguinal region revealed testis like morphology and presence of uterus and ovaries structures subcutaneously. The case was subsequently diagnosed as hermaphroditism.

**Keywords:** Hermaphrodite, Prominent clitoris, Fish hook vulva, Ultrasound, Goat

Hermaphroditism is an intersexuality in which the sex of the individual is indistinct due to congenital anatomical variation in genitalia (Roberts, 1986). The incidence of intersexuality is highest in goats among farm animals (Hafez *et al.* 2005) and accounts for about 2-15% in goats (Bosu and Basrur). They differ to various extents in (1) genetic sex (2) gonadal sex (3) phenotypic sex, and (4) hormonal or behavioral sex. Such individuals are classified based on the gonadal sex as either true hermaphrodites having both testis and ovaries i.e., ovotestes or pseudohermaphrodites having gonads of only one sex. Though hermaphroditism is reported to be common in goats, horned hermaphrodites are extremely rare (Roberts, 1986). Polled intersex syndrome (pseudo hermaphroditism) associated with single recessive sex limited character in goats has been well documented (Zhang *et al.* 2019). This case highlights the incidence of rare case of horned true hermaphrodite in non-descript goat.

## CASE HISTORY

A four-month-old horned goat was presented to Referral Veterinary Polyclinic, ICAR-Indian Veterinary Research Institute, Izatnagar with the

anamnesis of an abnormal growth at vulva. No other symptoms with normal micturition were reported. She was born as one of the triplets with two other male. Her mother has kidded triplets twice before and kids were normal on each earlier occasion.

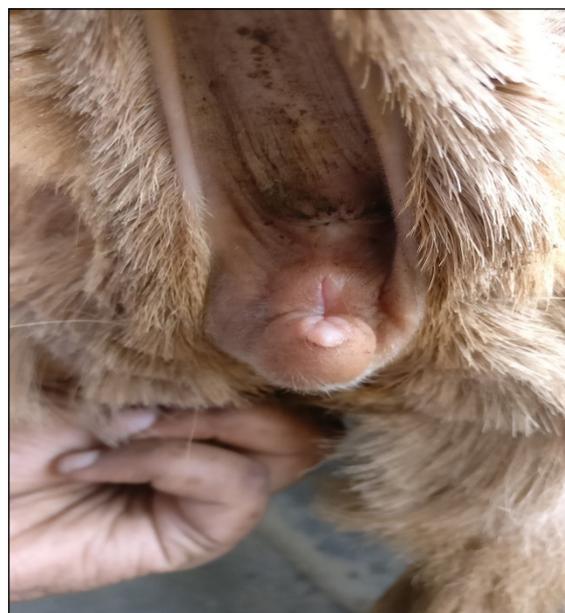
## Clinical observation and treatment

On clinical examination she was found physically normal with appropriate development for the age. Examination of external genitalia revealed that reported mass was actually the prominent vulva with hypertrophied clitoris (Fig.1a) and urethral opening could be visualized near the clitoris. The vulva was abnormal with a narrow opening and projected lower commissure– ‘fish hook vulva’ (Fig. 1b), with the clitoris being covered by a fold of skin. The vaginal length was assessed with a blunt test tube covered with lubricated plastic sheath with which an obstruction at distance of 4 cm was felt

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**Fig. 1a:** Exposed clitoris, highly vascular and projected giving fish hook appearance in skin

**Table 1:** Comparative vulvometry of hermaphrodite vs normal female goats (n=10) of 3-6 month of age

Parameter	Hermaphrodite	Normal	Remark
Distance between upper and lower commissure of vulva	2 cm	1.9±0.13(1.7-2.0) cm	Comparatively indifferent
Length of the skin pouch covering clitoris	1 cm	Not of appreciable size	—
Clitoris measured from base of the skin pouch to its tip	2.1 cm	Not of appreciable size	—
Protrusible length of clitoris	1 cm	Not of appreciable size	—
Horizontal distance along the maximal width of clitoris	3 cm	Not of appreciable size	—
Vagina length till obstruction	4 cm	9.4±1.07 (9.0-10.5) cm	Appears significantly low in hermaphrodite

initially (Table 1). Following a minor hemorrhage, the plastic sheath progressed little further. This indicated that the vagina ended blindly at length of 4 cm from vulva. Mammary gland development was appropriate for the age. Two peanut sized structures were palpable in subcutaneous tissue at the inguinal region and were suspected to be testes, which was later confirmed by B mode real time ultrasonography as testes (Fig.2a). Transrectal B mode real time ultrasonography revealed presence of uterus and ovaries (Figs. 2b and 2c). On confirmation of diagnosis, the owner was explained about the congenital abnormality and prognosis of the same.

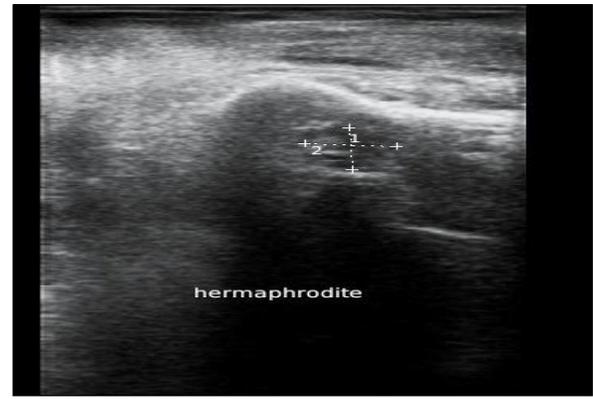
## DISCUSSION

The case reported here is a true hermaphrodite with

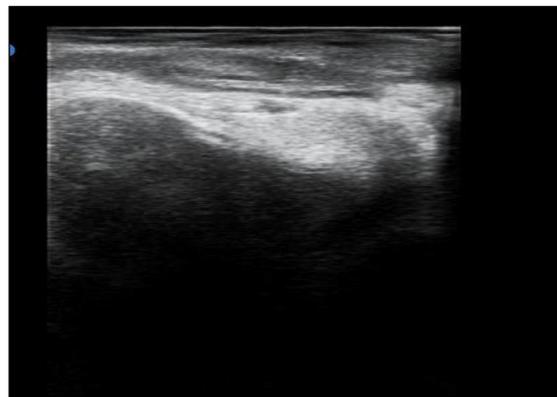
both gonads – testes and ovaries and intermediate type of external genitalia (Eaton, 1943) with prominent clitoris commonly explained as ‘fish hook vulva’. It is explained so because of the different pattern of urination exhibited with the increased angle of projected urination than normal females. In this case the owner was unaware of the condition and said urination was normal. Both gonads were present and so gonadal sex is complicated, phenotypic sex was of intermediate type as it had prominent clitoris with the urethral opening on it tending towards glans-penis and behavioral sex could not be assessed at four months of age as it was too young. Biopsy of the testes or gonads was not attempted in this case as both gonads were found separately and moreover it is invasive and does not help the patient and diagnosis. It was attempted



**Fig. 2a:** Moderately homogenous echogenic testis with hyperechoic mediastinum testis in the subcutaneous inguinal region



**Fig. 2b:** Traced Ovary like structure in the subcutaneous inguinal region using Ultrasonogram. The average diameter of ovary was found to be 0.77 cm



**Fig. 2c:** Uterus like structure traced by B mode real time transrectal ultrasonography

to compare the vulvometry measurements of the reported hermaphrodite case to the herd mates of normal genitalia. Therefore, the vulvometry of ten Rohilkhandi female goats within the age of 4-6 months were measured. On comparison (Table 1) it was found there exists no significant difference in the distance between upper and lower commissure of vulva between them, however vaginal length exhibited a marked difference with more prominent clitoris appreciable in the hermaphrodite case. Moreover, lower commissure of vulva was not projected in normal female kids which could guide the diagnosis at initial stage of investigation. With the initial clinical examination along with the anamnesis, the goat was suspected earlier for freemartin but it was ruled out later because of presence of testes. As the fertility prognosis and reproductive potential of such animals is hopeless and the condition can be masked with the nearly normal external genitalia, the farmers could be misled believing it to be a case of delayed puberty.

Hence the diagnosis of such cases at earlier stages receives significance to prevent economic loss to the poor farmer.

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