



# Hermaphroditism in a Goat: A Case Report

Mithun M D <sup>a++\*</sup>, Raju Deka <sup>a#</sup>, Manjyoti Bhuyan <sup>a†</sup>,  
Arup Das <sup>b#</sup>, Aziza Sabira Parbin <sup>a++</sup>, Dipti Das <sup>a++</sup>,  
Humakhi Tasa <sup>a++</sup>, Khan Iqbal Farid <sup>a++</sup>, Kushal Ray <sup>a++</sup>,  
Sajid Ahmed <sup>a++</sup> and Vartika Sanghi <sup>a++</sup>

<sup>a</sup> Department of Animal Reproduction, Gynaecology and Obstetrics, College of Veterinary Science, Khanapara, Guwahati-22, India.

<sup>b</sup> Department of Veterinary Surgery and Radiology, College of Veterinary Science, Khanapara, Guwahati-22, India.

## Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

## Article Information

DOI: <https://doi.org/10.9734/jabb/2024/v27i121796>

## Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/127032>

Case Report

Received: 14/09/2024

Accepted: 18/11/2024

Published: 21/12/2024

## ABSTRACT

A Six-month old prepubertal female goat was presented to Gynaecology division of Teaching Veterinary Clinical Complex, College of Veterinary Science, Khanapara, Guwahati-22, with the history of an abnormal mass at urinary orifice disturbing the urine flow. On clinical examination the mass was found as prominent clitoris, red in colour and felt pain upon palpation of the mass. The case was diagnosed as hermaphroditism.

<sup>++</sup> PG Scholar;

<sup>#</sup> Assistant Professor;

<sup>†</sup> Associate Professor;

\*Corresponding author: E-mail: [mithun.md130@gmail.com](mailto:mithun.md130@gmail.com);

**Cite as:** M D, Mithun, Raju Deka, Manjyoti Bhuyan, Arup Das, Aziza Sabira Parbin, Dipti Das, Humakhi Tasa, Khan Iqbal Farid, Kushal Ray, Sajid Ahmed, and Vartika Sanghi. 2024. "Hermaphroditism in a Goat: A Case Report". *Journal of Advances in Biology & Biotechnology* 27 (12):485-87. <https://doi.org/10.9734/jabb/2024/v27i121796>.

**Keywords:** Clitoris; hermaphrodite; goat; chromosomal deletions.

## 1. INTRODUCTION

True hermaphroditism is a rare form of intersex disorder presenting with ovarian and testicular tissue within an individual. The incidence of intersexuality is highest in goats among the farm animals and accounts for about 2-15% (Hafez et al., 2005). True Hermaphroditism was diagnosed in a goat with abnormal urinary discharge and small protruding mass from the uroneum. This condition causes serious unacceptable issues in terms of breeding, health issues and genetics (Cunningham1885, Aziziet al. 2015, Eaton1945, Gupta, et al. 2022). The etiology of true hermaphroditism is multifactorial but commonly involves genetic mal-segregation during embryogenesis, chromosomal deletions (loss of part) or translocations (part transferred to another) (Roberts, 1986).

## 2. CASE HISTORY

A Six-month old prepubertal female goat was presented to Gynaecology division of Teaching Veterinary Clinical Complex, College of Veterinary Science, Khanapara, Guwahati-22, with the history of an abnormal mass at urinary orifice disturbing the urine flow.

### 2.1 Clinical Observation and Treatment

Upon the general examination conjunctival mucus membrane, popliteal lymph nodes and body temperature appeared to be in normal. The animal was healthy and active. During the Physical examination the abnormal mass swelled at urinary orifice (Fig. 1a). It appeared to be penile swelling and was red in colour and felt

pain upon palpation of the mass (Fig. 1b). Thus, on grounds of history and Clinical examination the case was diagnosed as Intersex or Hermaphroditism. Injection of Avilin and Meloxicam was given intramuscularly and advised the owner do not use the goat for breeding purpose in future.

## 3. DISCUSSION

The pathophysiology of hermaphroditism, where both ovarian and testicular tissues are functional and may drive opposing sexual phenotypic expression. These individuals may be born with ambiguous genitalia as well as abnormal hormone levels signaling reproductive dysfunction. Both gonadal tissues can be affected in a functional sense, which is going to contribute toward the overall health of the animal and its ability to reproduce. Clinical Signs of true hermaphroditism in goats are ambiguous external genitalia, abnormal reproductive behaviors and some urinary tract anomalies. The goat showed abnormal discharge from the urinary orifice and a hanging mass in its body indicative of reproductive system lesions, which was demonstrated by case presented. Further their was enlarged cervix, kinked in nature appearing as fish hook vulva compromising with results of Roberts 1986, Hafez et al. (2005) and Weng et al. (2005) All this can be observed in infertility process, oestrous cyclic irregularity that may appear other signs of hormonal imbalances. Diagnosis of true hermaphroditism usually requires a physical examination, hormonal assays and imaging studies. Zlotnik et al., (1973) and Bosu and Basrur et al. (1984) states that increased testosterone levels were found in the



**Fig. 1. Exposed clitoris and abnormal mass swelled at urinary orifice**

intersex animals when compared to normal females. The mean increase in blood testosterone of  $4.68 \pm 0.27$  ng/ml was estimated from 6 goats, which is high when compared with healthy goats with mean value ( $0.40 \pm 0.01$  ng/ml) and lower than disease free male goats ( $7.36 \pm 0.28$  ng/ml) as reported by Gupta C et al. (2022).

Clinically, the patients might have atypical external genitalia and thus a physical examination suffices as one of diagnostic investigation for these cases. There is a place for imaging studies, e.g. ultrasonography to evaluate the internal reproductive. Diagnosis in the case of a present study was confirmed on clinical examination and presentation. To summarize, the present report describes an uncommon but significant malformation in goats with Intersex and stresses on accurate diagnosis & management of such cases. Knowledge of the etiology, pathophysiology, clinical manifestations and diagnostic methods is important in caring for affected animals.

#### 4. CONCLUSION

This case report deals with the Hermaphrodite condition in a goat. Physical and Clinical examination revealed abnormal mass swelled at urinary orifice and protruded clitoris and resembling as fish hook vulva. This give a brief idea about diagnosing the case at field level. Therefore, the diagnosis of Hermaphrodite at earlier stages provides a significant impact to prevent the economic losses to the poor farmers.

#### DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image

generators have been used during writing or editing of this manuscript.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

#### REFERENCES

- Azizi, S., Kheirandish, R., & Sami, M. (2015). Occurrence of bilateral dysgerminoma in a true hermaphroditism goat. *Comparative Clinical Pathology*, 24, 469–472.
- Bosu, W. T. K., & Basrur, P. K. (1984). Morphological and hormonal features of an ovine and a caprine intersex. *Canadian Journal of Comparative Medicine*, 48, 402–409.
- Cunningham, D. J. (1885). A hermaphroditic goat. *Transactions of the Academy of Medicine in Ireland*, 3(1), 457.
- Eaton, O. N. (1945). The relation between polled and hermaphroditic characters in dairy goats. *Genetics*, 30(1), 51.
- Gupta, C., Murugan, M., & Ramprabhu, R. (2022). Male pseudohermaphroditism in goats: A case report. *Indian Journal of Small Ruminants*, 28(1), 221–223.
- Hafez, S. A., Huckle, W. R., & Caceci, T. (2005). Anatomical, histological and genetic investigations of a sexually anomalous goats. *Veterinary Records*, 157(7), 513–516.
- Roberts, S. J. (1986). *Veterinary Obstetrics and Genital Diseases* (2nd ed.). CBS Publishers and Distributors.
- Weng, Q., Murase, T., Asano, M., & Tsubota, T. (2005). Male pseudohermaphroditism in a raccoon dog (*Nyctereutes procyonoides*). *Journal of Veterinary Medicine Science*, 67, 603–605.
- Zlotnik, G. (1973). Testosterone levels in intersex goats. *Journal of Reproduction and Fertility*, 32, 287–290.

**Disclaimer/Publisher's Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of the publisher and/or the editor(s). This publisher and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.

© Copyright (2024): Author(s). The licensee is the journal publisher. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:

<https://www.sdiarticle5.com/review-history/127032>