



ISSN: 2456-2912

NAAS Rating (2026): 4.61

VET 2026; 11(6): 175-177

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www.veterinarypaper.com

Received: 25-03-2026

Accepted: 29-04-2026

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Persistent right oviduct and egg impaction of the two oviducts: Chicken

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DOI: <https://www.doi.org/10.22271/veterinary.2026.v11.i6c.3519>

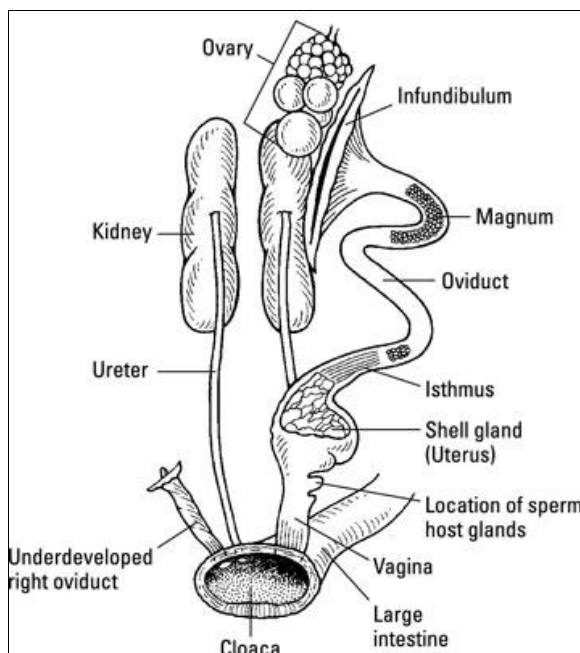
Abstract

This paper reports on a case of persistent right oviduct which seems to have been functional because the respective chicken was presented having egg impaction in both oviducts. This was contrasted with other cases of egg impaction seen at the clinic, which involved left oviduct only. It, therefore, contributes towards documented cases of persistent right oviduct, a rare occurrence in chickens.

Keywords: Persistent Right oviduct Impaction Chicken

1. Introduction

In almost all species of birds, including chickens, only the left ovary and oviduct are functional. Although the female embryo has two ovaries and oviducts, only the left pair (i.e., ovary and oviduct) develops ^[1] (Figure 1 below). The right one typically regresses during embryonic development and is nonfunctional in the adult bird.



(Source: Poultry extension website 2023 ^[1])

Fig 1: Drawing of normal picture of avian reproductive tract, where the right oviduct is degenerated

The first part of the oviduct, the infundibulum or funnel, is 3 to 4 inches long, and it engulfs the ovum released from the ovary ^[1] (Figure 2):

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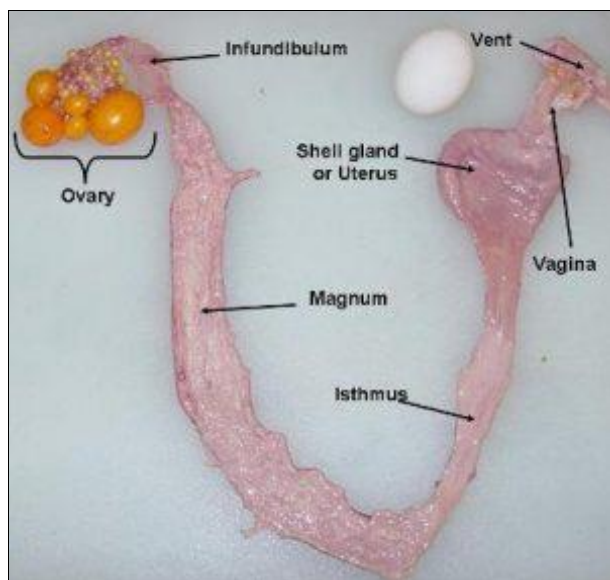


Fig 2: Reproductive tract of a female chicken

(Image by Dr. Jacquie Jacob, University of Kentucky)

The avian oviduct functions as a biological assembly line, beginning sequentially with the deposition of the albumen around the fertilized or unfertilized ovum, then the shell membrane, and lastly, the shell, all within 25 hours of ovulation. Egg impaction (accumulation of egg yolks in the oviduct) occurs when ova pile-up within the oviduct. It is normally seen in hens of high-production breeds, and as a result of chronic salpingitis (mostly caused by *E. coli* bacteria), which leads to malfunctioning of respective peristalsis; As the impacted mass grows in size, it can fill-up most of the chicken's body cavity, causing marked distension of the abdomen and resultant compression of the intestines and other internal organs. The condition normally leads to death of the bird/chicken [2, 3].

Structural anomalies involving persistence of the right ovary, oviduct and/or oviductal orifices in the hen have been reported [4-6]. They tend to have a hereditary nature [7, 8, 9, 10].

Cases of egg impaction seen at the poultry clinic, University of Nairobi, Kabete, Kenya

The poultry clinic, University of Nairobi, carries-out diagnostic services (through post mortem) for farms in Nairobi and its environs. It also serves as a referral center for farms in other parts of Kenya. It handles birds of various breeds (mainly cross breeds), of both exotic and indigenous type. A number of egg-impaction cases are seen at the clinic; they concur with the hen having one oviduct – the left one, as shown in Figure 3:



Fig 3: Pictures of left oviduct egg-impaction (arrows)

Case seen that potended presence of persistent right oviduct Clinical history

Layer of mixed breed. It came from a flock that was showing reduced egg production and dying sporadically. The birds were vaccinated for Newcastle disease and Gumboro disease.

Post-mortem examination

The dead bird brought to the clinic was fairly heavy (not emaciated); had no ectoparasites; abdomen appeared swollen but hardish to touch (no ascites); vent feathers showed signs of wetness. Following are the respective post-mortem pictures. It was a case of persistent right oviduct, and egg-impaction in both the oviducts (Figures 4, 5 and 6). There was no sign of right ovary.

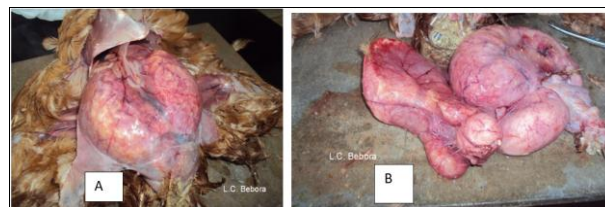


Fig 4: The two impacted oviducts *in situ* (A) and when isolated (B)

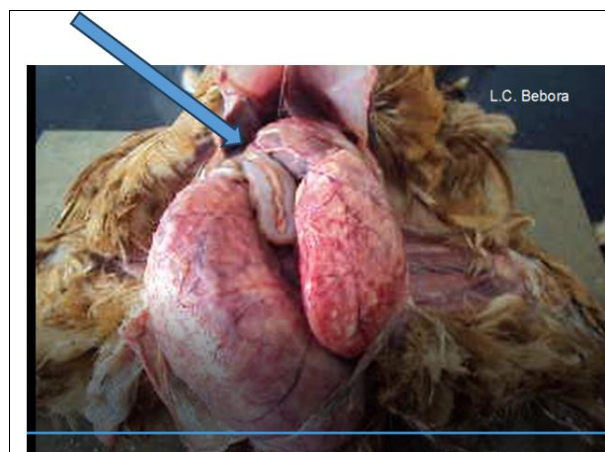


Fig 5: Taken at a different angle – showing positioning of the right oviduct that may have enabled it to pick ova from the left ovary



Fig 6: One of the oviducts opened, showing the impacted egg material (arrow)

Discussion and Conclusion

This case portrays presence of a persistent, functional right oviduct; an observation that is supported by observations made by earlier researchers [6, 11 12]. McKenney [11] reported that, out of the 450 chickens of various breeds and ages that were autopsied at their clinic, 2 had persistent right oviducts that were well-developed as the left ones and were comparable in length and diameter as the left one. Also, in one of the two, the right duct was apparently functional. Wakamatsu *et al* [6], working on laying hens of an inbred line of Fayoumi breed, reported presence of persistent right oviducts with regions similar to those normally observed in the left oviduct. The right oviducts had sufficient elasticity to

permit extension when the birds came into production. In fact, a few of them were found to harbour an egg in their uterus regions. Their right ovaries were not there – had regressed. While Crew ^[12] reported on a Brown Leghorn hen with a normal left ovary associated with completely differentiated left and right oviducts.

This case, therefore, adds to the reported cases of persistent right oviduct, a rare occurrence in chickens.

Acknowledgements

The author would like to thank the University of Nairobi, particularly the Department of Veterinary Pathology, Microbiology and Parasitology, for enabling her to work at the Poultry clinic, which is domiciled in the department, for 44 years. Appreciation also goes to the technical and support staff stationed at the poultry clinic (in particular Mary Mutune and Jack Omondi) and the other veterinarians that rotationally ran the clinic with her.

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How to Cite This Article

Bebora LC. Persistent right oviduct and egg impaction of the two oviducts: Chicken. International Journal of Veterinary Sciences and Animal Husbandry. 2026; 11(6): 175-177.

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