

GROSS FEATURES OF INFUNDIBULUM IN PRE-LAYING AND LAYING JAPANESE QUAIL (*Coturnix coturnix japonica*)

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Abstract: The present study investigated the morphology of the oviduct in pre-laying and laying Japanese quail. It was found that only the left oviduct was functional, while the right oviduct was either absent or ill-developed in non-laying birds. In two cases, the right oviduct was observed as a blind-ended structure embedded in the caudal wall of the left oviduct. The oviduct in Japanese quail was identified as a thin, tortuous musculo-membranous tube extending from the ovary to the cloaca. It showed significant morphological differences between pre-laying and laying birds, being thinner and more convoluted in the pre-laying stage. The oviduct was composed of five distinct segments: infundibulum, magnum, isthmus, uterus, and vagina. These findings were consistent with earlier reports in Japanese quail and other avian species.

Keywords: Gross, Oviduct, Pre-laying, laying Japanese quail, features.

Introduction

The quail is the most important bird after chicken from an economic aspect (Sharma *et al.* 2000). Quail was first reported as a useful research model by Padgett and Ivey (1960), and since then, quail have become a common laboratory species for a range of investigations, including developmental, behavior, and environmental investigations. Besides this, low maintenance cost in the rearing of quail along with its small body size, short generation interval, considerable resistance to disease, and high egg production rendered quail an excellent laboratory animal (Oguz and Minvielle, 2001) and (Vali, 2008).

Materials and Methods

The present study was conducted in the Department of Veterinary Anatomy and Histology, College of Veterinary and Animal Sciences, Parbhani.

For the present study 48 female Japanese quail birds (*Coturnix coturnix japonica*) were procured from authenticated source and reared on poultry form of Department of Poultry Science, College of Veterinary and Animal Sciences, Parbhani under standard managerial quail rearing practice.

The oviduct were collected from 12 birds each at end of 4th week, 5th week (Pre-laying period), 6th week and 7th week (laying period). The birds were sacrificed and entire oviduct starting from infundibulum to vagina was excised by abdominal laprotomy and cranial displacement of sternum. The collected oviducts were washed with normal saline and were cut into its different segment.

The tissue pieces of all segments of oviduct were fixed in 10% neutral buffered formalin and 10% formal saline. Then the tissues were processed for routine paraffin embedding as per the method of Drury and Wallington (1980). Sections of 5 µm thickness were taken on rotary microtome processed for following staining procedures for histomorphological studies.

Result and Discussion

In the present study, only the left oviduct was functional in pre-laying and laying Japanese quail birds. However, an ill-developed right oviduct with a blind caudal end embedded in the caudal wall of the left oviduct was observed in two non-laying birds. In accordance with the present findings Eroschenko (1974) in Japanese quail, Mishra *et al.* (2014) in chicken, Dhyaa and Al-Saffar (2015) in Mallard Duck, Essam *et al.* (2016) in Balady Duck and Alshammary *et al.* (2017) in Geese reported the presence of only left oviduct.

The oviduct in Japanese quail was found as a thin tortuous musculo-membranous tube in large part of the abdominal cavity extending from the ovary to the cloacae. The oviduct was observed as a very thin and convoluted tube in pre-laying birds compared to the laying birds (Figure 1). Similar observations were recorded by Eroschenko (1974) in Japanese quail, Essam *et al.* (2016) in Balady Duck and Alshammary *et al.* (2017) in Geese. However, in partial agreement, Dhyaa and Al-Saffar (2015) in Mallard Duck reported that the oviduct was a thin, straight tube.

In the present study, it was observed that the oviduct in quail was irregular in diameter and consisted of the infundibulum, magnum, isthmus, uterus, and vagina from cranial to caudal aspect. The infundibulum in Japanese quail showed cranial thin-walled funnel-shaped part and caudal thick-walled tubular part. This observation is in accordance with the findings made by Ghule *et al.* (2010) in Japanese quail. Similar reports were also made by Pattnaik *et al.* (2018), Wani *et al.* (2017), Sari *et al.* (2014), Mishra *et al.* (2014), Saber *et al.* (2009), Mohammadpour (2007), Essam *et al.* (2016), and Alshammary *et al.* (2017) in different avian species. They reported the five segments of the oviduct.

Summary and Conclusion

The oviduct was a thin, tortuous tube occupying a large part of the abdominal cavity. It was more convoluted and thinner in pre-laying birds compared to laying birds. The oviduct comprised five segments—infundibulum, magnum, isthmus, uterus, and vagina. The infundibulum had a cranial funnel-shaped part and a caudal thick-walled tubular part. Only the left oviduct was functional in both pre-laying and laying quail. Two non-laying birds exhibited a rudimentary right oviduct with a blind caudal end.

Observations were in agreement with findings in Japanese quail, chickens, ducks, and geese, affirming that only the left oviduct develops functionally in most avian species.

This study confirms that the left oviduct is the only functional reproductive duct in Japanese quail, with the right oviduct either regressed or rudimentary in non-laying birds. The structural differentiation of the oviduct, particularly its segmentation and morphology, varies with the reproductive phase. These findings support the broader pattern observed across various avian species and contribute to a better understanding of avian reproductive anatomy, particularly in relation to egg-laying physiology.

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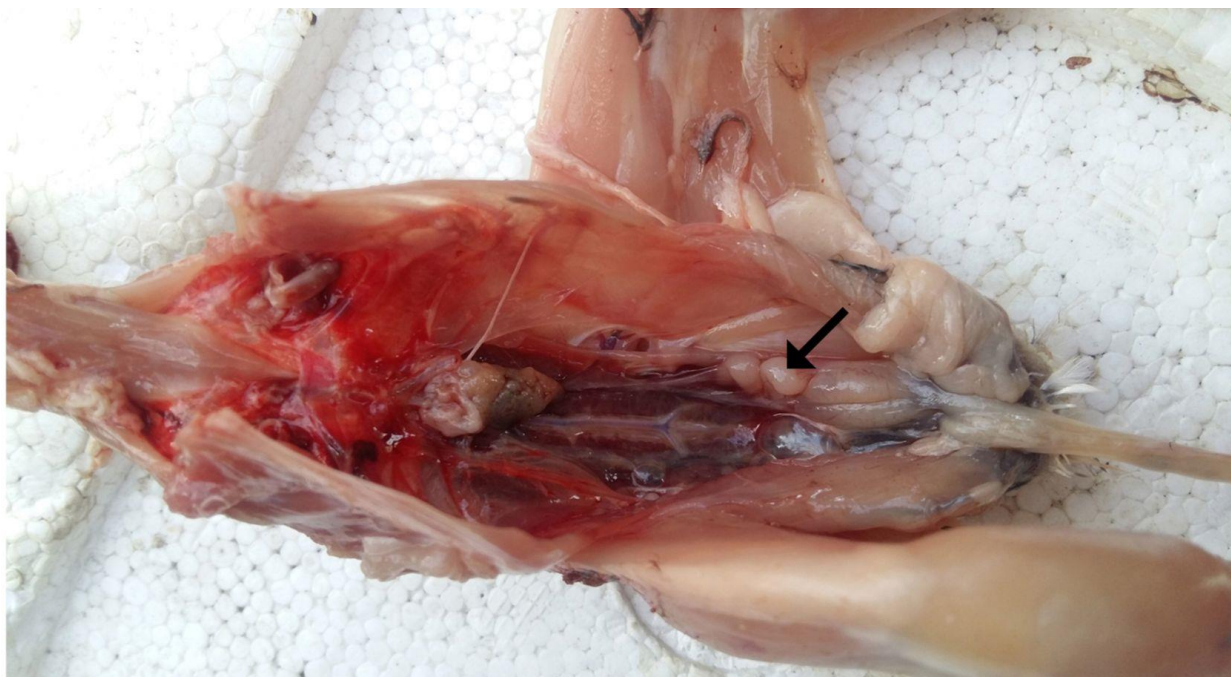


FIGURE 1. - The dissection of the Japanese quail (*Coturnix coturnix japonica*) in laying stage showing the oviduct (Arrow).