

## **INVESTIGATING THE STRUCTURAL FEATURES OF THE INTESTINE IN JAPANESE QUAIL (COTURNIX COTURNIX JAPONICA)**

**<sup>1</sup>Appa K.B. and <sup>2</sup>S. M. Toty**

<sup>1</sup>Department of Veterinary Anatomy and Histology

<sup>2</sup>College of Veterinary and Animal Sciences, Parbhani Maharashtra 431402

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**Abstract:** The study aimed to investigate the gross features of the oviduct in Japanese quail during the pre-laying and laying stage. A total of 48 female Japanese quail birds aged 4-7 weeks were used in the study, where only the left oviduct was found to be functional. The oviduct was observed as a thin and convoluted tube in pre-laying birds compared to laying birds. The oviduct 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. Similar observations were reported in different avian species.

The study highlights the importance of gross observations on the oviduct in different age groups during the pre-laying and laying stages to further understand the reproductive physiology and future reproductive-related disorders in Japanese quail. Quail is a significant bird economically due to its high egg production, small body size, and short generation interval. Therefore, a better understanding of the reproductive system of quail is essential for its proper management and utilization. The research findings encourage further investigations on the histomorphology of the oviduct in quails for better insight into reproductive physiology and related disorders.

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**Keywords:** Gross Anatomy, Oviduct, Pre-Laying, Laying, Quail.

### **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 managemental quail rearing practice.

The oviduct were collected from 12 birds each at end of 4<sup>th</sup> week, 5<sup>th</sup> week (Pre-laying period), 6<sup>th</sup> week and 7<sup>th</sup> 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.

## Summery and Conclusion

In the present study, gross, observations were recorded on the oviduct at different age groups of the pre-laying and laying stage.

In the present study, only the left oviduct was functional in pre-laying and laying Japanese quail birds. The oviduct occupied a large part of the abdominal cavity extending from the ovary to the cloacae. The oviduct was a very thin and convoluted tube in pre-laying birds compared to the laying birds.

The oviduct was irregular in diameter and consisted of the infundibulum, magnum, isthmus, uterus, and vagina from cranial to caudal aspect. The infundibulum consisted of cranial thinwalled funnel-shaped part and caudal thick-walled tubular part.

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