

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

P.N. Thakur<sup>1</sup>, J.Y. Waghaye<sup>2</sup>, C.S. Mamde<sup>3</sup>, S.D. Kadam<sup>3</sup> and N.M. Karad

Assistant Professor, Associate Professor, Lab technician Assistant Professor

Department of Veterinary Anatomy and Histology

College of Veterinary and Animal Sciences, Parbhani Maharashtra 431402

**Abstract:** 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 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 walled tubular part.

**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 managerial 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

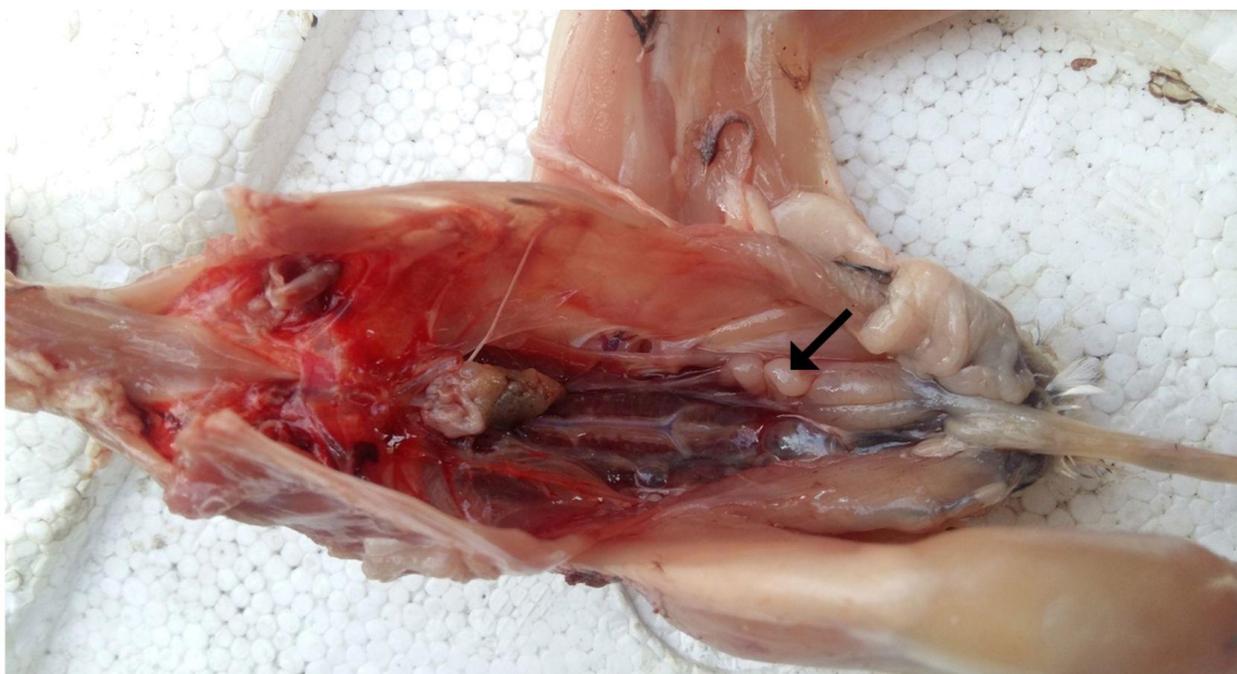
ovary to the cloacae. The oviduct was a very thin and convoluted tube in pre-laying birds compared to the laying birds.

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 thin-walled funnel-shaped part and caudal thick-walled tubular part.

### References

- [1] Aishammary, H. K. J. A. Ali ismail and N. R. Abdul Ameer, [2017]. Geese ovary and oviduct from an anatomical and histological point of view. "Research Journal of Pharmaceutical, Biological and Chemical Sciences, **8**(6), 206-219.
- [2] Dhyaa Ab Abood and F. J. Al Saffar, [2015]. The post hatching development of the female genital system in indigenous Mallard Duck. The Iraqi Journal of Veterinary Medicine, **39**(2), 17-25.
- [3] Drury, R.A.B. and E.A. Wallington [1980], Carleton's Histological Technique, 5<sup>th</sup> Edn., Oxford University Press, New York.
- [4] Eroschenko, V. P., [1974]. Histological changes in the regressing reproductive organs of sexually mature male and female japanese quail. *Biology of Reproduction*, 121, 168-179.
- [5] Eroschenko, V. P. 1974 *Biology of reproduction*, Volume 11, Issue 2, 1 September [1974], Pages 168–179,
- [6] Essam, M., A. El Gendy, M. I. Samah, H. El-Bably, N. A. Shaker and H. H. Shaimaa, [2016]. Morphological and Histological studies on the female oviduct of balady Duck. *International Journal of Advanced Research in Biological Science*, **3**(7), 171-180.
- [7] Ghule, P. M., S.A. Gaikwad, P. L. Dhande, S. B. Lambate, A. D. Patil, S. S. Tiwari and R. Ayana, [2010]. Histomorphological study of the oviduct in japanese quail. *Indian Journal of Veterinary Anatomy*, 22(1), 40-42.
- [8] Mishra, D., N. Sultana, M.A. Masum and S. Rahman, [2014]. Gross and Histomorphological studies of the oviduct of native chicken of Bangladesh. *Bangladesh Journal of Veterinary Medicine*, **12**(1), 9-15.
- [9] Mohammadpour, A. A., [2007]. Comparative histomorphological study of uterus between laying hen and duck. *Pakistan Journal of Biological Science*, **10**(19), 3479 - 3481.
- [10] Oguz, I. And F. Minvielle [2001]. Effects of genetics and breeding on carcass and meat quality of Japanese quail. A review. *Proceedings of XV European symposium on the quality of poultry meat*, WPSA Turkish branch, 9-12 Sept 2001, Kusadasi- Turkey. <http://www.sciencepub.net/newyork>

- [11] Padgett and Ivey [1960]. The normal embryology of the Coturnix quail. *Anat. Rec.*, **137**: 1 -11.
- [12] Pattnaik, N., R.K. Das and S. Debury, [2018]. A comparative micrometry and Histochemical study on the oviduct of White Leg Horn and Rhode island red chicken. *Exploratory Animal & Medical Research*, **8**(1), 103-106.
- [13] Saber, A. S., S. A. M. Emar and O. M. M. Abosaeda, [2009], Light, scanning and Transmission Electron Microscopical study on the oviduct of the Ostrich (*Struthio camelus*). *Journal of Veterinary Anatomy*, **2**(2), 79-89.
- [14] Sari Noor, R. R., S. Hardjosworo Peni and N. Chairun Nisa, [2014], *International Journal of Chemical Engineering and Applications*, **5**(4), 307-310.
- [15] Sharma, D.; Appa, K.B. and S. M. Toty [2000]. Measurement of within and between population genetic variability in quail. *Br. Poultry.Sci.* **41**: 29 - 32.
- [16] Vali, N. [2008]. The Japanese quail: A review. *Inter. J. Poult. Sci.* **7**: 925 - 931.
- [17] Wani H., N. M. Darzi, A. K. Shyalb, S. A. Wani, Z. H. Munshi, A. Shakoor, T. A. Raja, S. Shoukat, B. Kashani and A. Shah, [2017]. Histological and Histochemical studies on the reproductive tract of Kashmir faverolla chicken *Journal of Entomology and Zoology Studies*, **5**(6), 2256-2262.



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