

Therapeutic Management of Oviposition Disorder in a Domestic Hen

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Abstract

Two year-old domestic hen was presented with lethargy, straining and failed to lay eggs for 2 days. Clinical examination and palpation suggested egg retention in the coelomic cavity. Ultrasonography and radiography confirmed a retained shell-less egg within a mildly distended oviduct. Biochemical analysis revealed hypocalcaemia. The case was diagnosed as egg retention associated with hypocalcaemia. Treatment with subcutaneous 10% calcium gluconate, oral calcium supplementation and supportive care resulted in oviposition of a shell-less egg followed by a normally shelled egg within 3 days after treatment. No recurrence was observed.

Keywords: Egg retention, dystocia, hypocalcemia, shell-less egg

Introduction

Egg binding/retention is defined as the failure of a fully or partially formed egg to pass through the oviduct within a normal timeframe, resulting in prolonged retention in the shell gland or vagina and potentially life-threatening sequelae if not relieved timely. Disruption of this process can result from a variety of factors. Among metabolic causes, hypocalcaemia is a frequently implicated condition due to its central role in regulating smooth muscle contractility and eggshell calcium deposition (Rosen, 2012). The current paper describes the successful medical management of egg retention in a domestic chicken.

Case History and Observation

Two year-old domestic hen was presented to Veterinary College and Research Institute, Orathanadu, TANUVAS with a history of lethargy, repeated straining and failure to lay egg for a period of 2 days. On clinical examination, the bird was depressed with intermittent cloacal straining and tail pumping. Gentle palpation revealed a soft, ovoid mass within the reproductive tract. Transabdominal B-mode ultrasonography using a 7.5 MHz linear probe revealed a retained ovoid structure

within the oviduct, characterized by an anechoic lumen and absence of acoustic shadowing consistent with a shell-less egg. The oviduct was mildly distended without appreciable coelomic effusion. Radiography revealed a radiolucent ovoid structure consistent with a shell-less egg in the reproductive tract. Blood was collected from the wing vein and subjected to biochemical analysis, which revealed reduced serum calcium concentration (7 mg/dL) and comparatively low-normal serum phosphorus levels (2.3 mg/dL). Based on clinical findings, imaging, and biochemical evidence of hypocalcaemia, the case was diagnosed as egg retention associated with hypocalcaemia.

Treatment and Discussion

Calcium gluconate 10% (10 mL) was administered subcutaneously. Oral calcium and multivitamin supplementation were advised to address ongoing mineral and micronutrient deficiency. The hen was maintained in a thermoneutral environment (28–30 °C) with mild humidity to reduce stress and support oviductal motility. Clinical improvement was observed over the subsequent 48–72 hr post therapy. The bird successfully ovipositioned on day 3 of treatment. The first egg passed was shell-less, followed by a normally shelled egg, indicating restoration of oviductal contractility with gradual recovery of shell gland

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mineralization. Immediate recurrence of dystocia was not observed following short-term follow-up.

Calcium is a critical component of eggshell calcification and of smooth muscle contraction in the oviduct (An *et al.*, 2016). Research on laying hens shows that dietary calcium and its metabolism influence eggshell quality, bone retention and plasma calcium status and that deficits in calcium availability are associated with compromised reproductive performance and eggshell formation, particularly in low-calcium diets or when physiological demands are high (Sinclair-Black *et al.*, 2023). General reviews of avian reproductive

disease highlight calcium-associated oviductal inertia as a key factor in egg impaction syndromes in laying hens (Greenacre, 2015). Egg binding in laying hens represents a multifactorial reproductive disorder in which calcium homeostasis plays a pivotal role. Hypocalcaemia compromises oviductal smooth muscle contractility, predisposing to impaired egg transport and dystocia, while simultaneously disrupting shell gland mineralization, resulting in soft- or shell-less eggs. Early recognition of calcium imbalance and targeted medical management are therefore essential for effective treatment and prevention of dystocia and other oviposition disorders in domestic hens.



Fig. 1. Domestic hen presented with lethargy, repeated straining, and failure to lay eggs

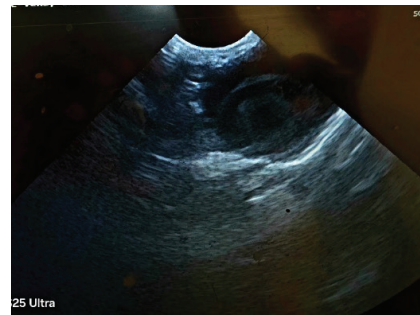


Fig. 2. Ultrasonographic image showing a distended oviduct with an anechoic lumen and absence of acoustic shadowing



Fig. 3. Radiographic view of the coelomic cavity revealing a radiolucent ovoid structure within the reproductive tract



Fig. 4. Sequential egg passage following treatment: initial shell-less egg followed by a normally shelled egg

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