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Oviductal Impaction in Three Budgerigars (*Melopsittacus undulatus*): A Case Report and Systematic Review

K. Gerbaga Özsemir[1], D. Sezer[2]

[1]Department of Wild Animal Diseases and Ecology, Faculty of Veterinary Medicine, Ondokuz Mayıs University, Samsun, Turkey
[2]Vethouse Pet Sağlık Merkezi, Istanbul, Turkey
*Corresponding Author: Kübra Gerbaga Özsemir, Ondokuz Mayıs University, Faculty of Veterinary Medicine, Department of Wild Animal Diseases and Ecology, 55100, Samsun, Turkey. E-mail: kubra.ozsemir@omu.edu.tr

Abstract

Three cases of oviductal impaction in budgerigars (*Melopsittacus undulatus*) caused by torsion and egg binding in the oviduct are described in this study. In two birds, egg bound diagnosis could be made by radiography, and manual transcloacal removal was performed under general anesthesia. Exploratory coeliotomy was performed in one bird with salpingitis and torsion. Clinical findings, diagnostic method, treatment, and results of three cases are presented. Reproductive tract diseases are common in avian practice, especially among female birds. We conducted a systematic review of the case report and case series on oviductal impaction in birds In three major databases, relevant articles published in 1980–2024 were identified. Most information on studies was recorded in India. Data from 27 patients presented as cases in 21 different studies were evaluated. This study performs a systematic review of the species of birds, methods, treatments, and prognoses described in the literature about oviductal impaction in birds and is intended to be reference material for students, researchers, and clinicians.

Keywords: *Dystocia, Birds, Oviduct impaction, Egg bound, Salphingohysterectomy*

Introduction

Egg binding and dystocia are the most common emergencies in many species of adult female birds in captivity. (Harcourt- Brown, 1996; Crosta et al., 2003) It refers to delayed ovulation due to mechanical obstruction or suppression as a result of cloacal dysfunction. (Vavlas et al. 2025) Dystocia is more complicated than just egg entrapment. There are many underlying causes, including functional (malformed eggs, cloacal masses, oviductal pathologies, obesity), metabolic (vitamin E, selenium deficiency, calcium imbalance and nutritional deficiency), environmental (temperature changes, lack of exercise and stressors) and hereditary diseases (Echols and Speer, 2022; Vavlas et al., 2025). Small birds such as canaries, nightingales and parakeets are much more affected by the disease (Lorenzo et al., 2003; Harcourt-Bown, 1996).
Clinical symptoms include dyspnea, unilateral or bilateral paresis of the legs, depression, and lethargy (Vavlas et al., 2025). Diagnosis is based on clinical signs, palpation and imaging techniques such as radiography, fluoroscopy, CT and US. (Vavlas et al., 2025; Crosta et al., 2003; Harcourt- Brown, 1996)
Treatment options can be categorized as follows: medical treatment; ovocentesis; mechanical support; surgical treatment. Sometimes, in cases diagnosed early, fluid replacement, calcium supplementation, and analgesia can successfully stabilize the patient. (Vavlas et al., 2025) Salpingohysterotomy and salpingohysterectomy are indicated in cases of postovulatory stasis or dystocia where medical treatment fails. (Gorham et al., 1992; Mehler and Bennett, 2022)
This study describes a case report of three budgerigars suffering from oviduct impaction. We then present a systematic review of the literature on oviductal impaction in birds, including diagnostic methods, treatments, and prognosis.

Case Reports

Case 1

A 3-year-old female budgerigar (*Melopsittacus undulatus*) was evaluated because of labored breathing and tail wagging. Befor presented the bird increased territorial behavior of approximately one weeks duration and laid four eggs in cage (Figure 1). The bird's diet consisted of commercial budgerigar food and table food. On initial evaluation, the bird was lethargic and depressed. The physical examination revealed a swelling in the abdomen, and the egg could be palpated within it. To facilitate a complete physical examination, whole-body radiography was performed. Latero lateral whole-body radiography revealed a smooth, mineralized egg of normal shape, localized to the caudal coelomic cavity (Figure 2). Based on the history, clinical signs, and findings from the physical examination, the case was diagnosed as an egg-bound condition. The bird was placed in an oxygen chamber with Ventolin for 15 minutes. Prior to induction of anesthesia with isoflurane via a mask, the animal was

premedicated with intramuscular butorphanol, 2 mg/kg (Butomidor©; Richter Pharma, Wels, Austria). The patient was placed in dorsal recumbency and the vent region was cleaned with the isotonic and lubricated with 7.5% Povidone iodine. The retained egg was gently manipulated with a hand and the egg was removed carefully through the cloacal opening without breaking (Figure 3). The patient was treated with enrofloxacin (25 mg/kg PO q24h for 10 days; compounded suspension), meloxicam 0.5 mg/kg PO q12h (Metacam©; Boehringer Ingelheim, Ingelheim am Rhein, Germany), and calcium multivitamin supplement. The bird recovered uneventfully in 2 weeks, and there was no further follow-up from the owner.

Figure 1. Increased nesting behavior and four eggs laid.

Figure 2. Lateral radiographic view of a budgerigar (*Melopsittacus undulatus*) with an mineralized egg.

Figure 3. Egg that removed by manual trans cloacal removing technique in case 1.

Case 2

A 2-year-old female budgerigar (*Melopsittacus undulatus*) was presented to Istanbul University Cerrahpasa Faculty of Veterinary Science Hospital, Emergency Clinics with a primary complaint of straining, loss of appetite and tail wagging. The bird had no previous egg-laying history, and no clear diagnosis could be made on clinical examination and palpation. To facilitate diagnosis, whole-body radiography was performed. Ventral whole-body radiography revealed an incompletely formed or broken egg localized to the caudal coelomic cavity (Figure 4). The bird was then anesthetized with the same technique as case 1, for examination of the cloacal opening of the oviduct. The patient was placed in dorsal recumbency and the vent region was cleaned with isotonic and lubricated with 7.5% Povidon iyodinThe egg pieces were not visible in the terminal oviduct; however, the eggshell was removed using forceps. The removed shell pieces were non-mineralized and soft. The bird recovered from the

anesthesia after the lavage and aspiration of the cloacal opening. No bleeding or prolapse complications were observed after the intervention. The bird was treated with the same medical protocol in case 1. no egg-like residues were found in the control x-ray. The patient was followed up for 2 weeks, and no complications were reported.

Figure 4. Radiography shows that a broken egg localized to the caudal coelomic cavity.

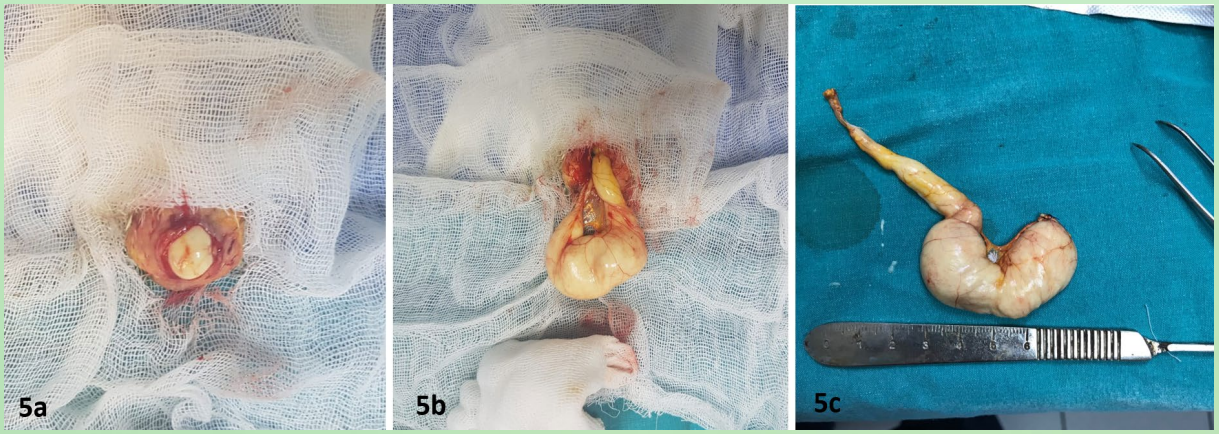

Figure 5. Salphyngohiysterectomy operation descreibed in case 3.

Case 3

A two-year-old female budgerigar (*Melopsittacus undulatus*) presented to our clinics with symptoms including weakness, reduced activity, swelling in the abdomen and inappetence. The bird had been treated with antibiotics and vitamins by the referring veterinary clinic for 5 days, but had failed to respond to treatment. Given the physical findings and history, an ultrasound examination was performed. The ultrasound examination of the coelomic cavity revealed a sac containing hypoechoic contents. There was no definitive diagnosis, but an experimental laparotomy was recommended.

The bird was then anesthetized with the same technique as cases 1 and 2. The bird was placed in dorsal recumbency. Feathers were plucked from the surgical site, which was prepared aseptically using chlorhexidine scrub and sterile saline. A sterile gauze drape was placed over the bird. A standard ventral midline approach to the coelomic cavity was performed. Skin and abdominal muscle were incised and a distended oviduct was easily seen (Figure 5a). The oviduct appeared torsioned (Figure 5b). All ligations were made manually, with 4/0 monofilament absorbable suture (Maxon, Covidien, Minneapolis, MN, USA), and the oviduct was removed. The oviduct was removed as far proximally as possible (Figure 5c). Closure of the abdominal cavity was performed in two layers in a simple interrupted pattern. The bird died in the anesthetic recovery period.

Materials and Methods

Search Methods and Inclusion Criteria

A systematic review of the case reports and case series was conducted searching PubMed, EBSCOhost, and Google Scholar databases using the keywords dystocia, egg binding, oviduct impaction, prolapse, salphingitis, etc., for articles published up to January 2025. To identify different articles in the databases and search engines, keywords were combined using the Boolean operators “AND” and “OR”. The documents were screened for the presence of the keywords in the title and abstract. This systematic review followed the PRISMA (Preferred Reported Items for Systematic Review and Meta-Analyses) guidelines as shown in Figure 6. (Page et al., 2021).

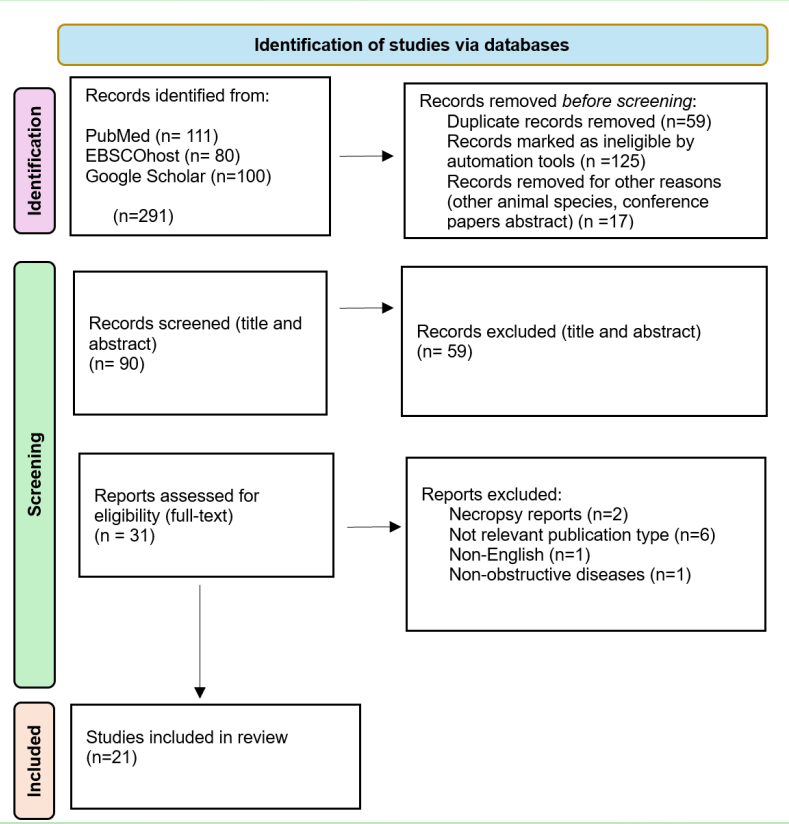

Figure 6. PRISMA flow diagram to select the included studies

The inclusion criteria of the primary studies were based on PICOS (Population, Intervention, Comparison, Outcomes, Study design). Scientific articles with the following designs were included: clinical case reports and case series. The studies included in this review were required to report data on clinical signs, treatments, and prognosis that had been used and/or observed in birds. Aviary birds, poultry, and wild birds were included in the study.

Selection of Studies and Data Collection

Two independent reviewers assessed the primary studies after excluding the duplicates identified from three search databases. Studies were screened based on a two-step assessment. The first step was the assessment of both titles and abstracts of the studies. The unsuitable studies were excluded, and the assessment continued to the second step, which involved a full-text screening. The appropriate studies were then classified as suitable for the systematic review and presented in Table 1, where they are organized based on the alphabetical order of the first author's surname. The following data were extracted from each of the selected studies.

1) Study characteristics (author's name, year of publication, journal, country, database)
2) Patient characteristics (bird's scientific names, age, number of patient in a study)
3) Oviductal impaction conditions characteristics (clinical signs, diagnostic methods, cause of impaction)
4) Intervention characteristics (surgical versus nonsurgical treatment options, complications, prognose)
5) Main results of the included studies.

Results

The studies were conducted between 1993 and 2024. Most of the studies were recorded in India, with 12 out of 21 studies conducted there. Data from 27 patients presented as cases in 21 different studies were evaluated. The species distribution was as follows: *Melopsittacus undulatus, Aratinga nenday, Eclectus roratus, Psittacula eupatria, Columba livia, Gallus gallus domesticus, Nymphicus hollandicus, Spheniscus demersus, Columba livia domesticus, Agapornis, Dromaius novaehollandiae, Anas platyrhynchos domesticus*. The distribution of the bird species and numbers that presented oviduct impaction in the analyzed literature is presented in Table 2.
The most frequent clinical signs were abdominal distension and swelling, and anorexia. Palpation and radiography have been documented as a strategy for diagnosing mineralized egg binding in birds. Additionally, in cases of oviductal impaction with hernia, torsion, or non-mineralized eggs, ultrasound, tomography, cytology, and hematology are recognized as diagnostic methods (Table 3).

Table 1. Studies for this systematic review

Author(s)	Year	Journal	Country	Database
Amin et al.	2019	SKUAST Journal of Research	India	PubMed
Anderson et al.	2018	Journal of Avian Medicine and Surgery	USA	PubMed
Apurva et al.	2022	The Science World a monthly e magazine	India	PubMed
Bel et al.	2015	Bulletin UASVM Veterinary Medicine	Romania	EBSCOhost
Bharathidasan et al.	2019	Journal of Entomology and Zoology Studies	India	PubMed
Chaudhari et al.	2020	International Journal of Pharmacognosy and Phytochemical Research	India	PubMed
Chaurasia et al.	2024	Vigyan Varta	India	Google Scholar
Clayton and Ritzman	2006	Veterinary Clinics of North America: Exotic Animal Practice	USA	PubMed
Crouch	2009	Acupuncture in medicine: Journal of the British Medical Acupuncture Society	Africa	PubMed
Devanand	2019	The Indian Veterinary Journal	India	EBSCOhost
Gündüz et al.	2009	Acta Veterinaria Eurasia	Turkey	PubMed
Harcourt-Brown	1996	Journal of Avian Medicine and Surgery	England	PubMed
Honnas et al.	1993	Journal of the American Veterinary Medical Association	USA	Google Scholar
Idrıs	2022	FUDMA Journal of Agriculture and Agricultural Technology	Nigeria	Google Scholar
Jos	2020	International Journal of Current Microbiology and Applied Sciences	India	Google Scholar
Joy and Divya	2014	Bangladesh Journal of Veterinary Medicine	India	EBSCOhost
Palanivelrajan et al.	2018	The Indian Veterinary Journal	India	PubMed
Palanivelrajan et al.	2022	The Indian Veterinary Journal	India	PubMed
Singh et al.	2017	International Journal of Current Microbiology and Applied Sciences	India	Google Scholar
Thangamani et al.	2024	International Journal of Veterinary Sciences and Animal Husbandry	India	PubMed
Ukaha and Okebaram	2021	Journal of Sustainable Veterinary & Allied Sciences	Nigeria	PubMed

Table 2. Distribution of the birds species and numbers that presented oviduct impaction in the analyzed literature

Author	Species	Number of patient
Amin et al., 2019	*Melopsittacus undulatus*	1
Anderson et al., 2018	*Aratinga nenday, Eclectus roratus*	2
Apurva et al., 2022	*Psittacula eupatria*	1
Bel et al., 2015	*Columba livia*	1
Bharathidasan et al., 2019	*Gallus gallus domesticus*	1
Chaudhari et al., 2020	*Melopsittacus undulatus*	1
Chaurasia et al., 2024	*Psittacula eupatria*	1
Clayton and Ritzman, 2006	*Nymphicus hollandicus*	1
Crouch, 2009	*Sphrenicus demursus*	1
Devanand, 2019	*Columba livia domesticus*	1
Gündüz et al., 2019	*Agapornis comprise*	1
Harcourt-Brown, 1996	*Nymphicus hollandicus, Eclectus roratus vosmae*	3
Honnas et al., 1993	*Dromaius novaehollandiae*	3
Idrıs, 2022	*Gallus gallus domesticus*	1
Jos, 2020	*Gallus domesticus*	1
Joy and Divya, 2014	*Gallus gallus domesticus*	2
Palanivelrajan et al., 2018	Unclear (Silky bird)	1
Palanivelrajan et al., 2022	*Psittacula eupatria*	1
Singh et al., 2017	*Anas platyrhynchos domesticus*	1
Thangamani et al., 2024	Aseel hen	1
Ukaha and Okebaram, 2021	*Gallus gallus domesticus*	1

Table 3. Characteristics of study included in the systematic review of oviduct impaction diagnosed birds.

Clinical signs	Diagnostic method	Disease	Species	Age (year)	Author(s)
Anorexia, deppression, fluffed feathers, abdominal tension	Palpation	Egg binding	*Melopsittacus undulatus*	4	Amin et al., 2019
Mass on the left caudal sternum, feather loss from ventral	Ultrasound, cytology, hematologic test	Herniated oviduct containing a non-mineralized egg.	*Aratinga nenday*	18	Anderson et al., 2018
Subcutaneous coelomic mass, pododermatitis	Hematologic test, coelomic computed tomography (CT)	Herniated oviduct	*Eclectus roratus*	12	Anderson et al., 2018
Labored breathing and tail wagging	Palpation, radiography	Egg binding	*Psittacula eupatria*	1.5	Apurva et al., 2022
No clinical signs	radiography	Egg binding	*Columba livia*	unknown	Bel et al., 2015
Cloaca with intermittent staining	Palpation, radiography, hematologic test	Egg binding	*Gallus gallus domesticus*	unknown	Bharathidasan et al., 2019
Tail wagging, swelling on abdomen	Palpation, radiography	Egg binding	*Melopsittacus undulatus*	1	Chaudhari et al., 2020
Anorexia, labored breathing, swelling on abdomen	Palpation	Egg binding	*Psittacula eupatria*	2	Chaurasia et al., 2024
Coelomic mass, widened, flaccid, erythematous vent	Radiography, hematologic test	Egg binding	*Nymphicus hollandicus*	6	Clayton and Ritzman, 2006
Unable to walk	radiography	Egg binding	*Sphrenicus demursus*	1	Crouch, 2009
Swelling on abdomen	Palpation, radiography	Egg binding	*Columba livia domesticus*	1	Devanand, 2019
No clinical signs	radiography	Egg binding	*Agapornis comprise*	1.3	Gündüz et al., 2019
Distended abdomen	Palpation	Egg binding	*Nymphicus hollandicus*	4	Harcourt-Brown, 1996
Distended abdomen	Palpation	Egg binding	*Nymphicus hollandicus*	5	Harcourt-Brown, 1996
Distended abdomen	Palpation, radiography	Egg binding, tortion of oviduct	*Nymphicus hollandicus*	Unknown	Harcourt-Brown, 1996
Lethargy, anorexia, abdominal mass	Palpation, radiography	Egg binding	*Dromaius novaehollandiae*	Unknown	Honnas et al., 1993
Lethargy, anorexia, abdominal mass	Palpation, radiography	Egg binding	*Dromaius novaehollandiae*	Unknown	Honnas et al., 1993
Lethargy, anorexia, abdominal mass	Palpation, radiography	Egg binding	*Dromaius novaehollandiae*	Unknown	Honnas et al., 1993
Staining, swelling on abdomen and anorexia	Palpation	Egg binding	*Gallus gallus domesticus*	<1	Idrıs, 2022
Weakness	Palpation, radiography	Egg binding	*Gallus domesticus*	<1	Jos, 2020
Lethargy, abdominal mass	Palpation	Egg binding	*Gallus gallus domesticus*	<1	Joy and Divya, 2014
Lethargy, abdominal mass	Palpation	Egg binding	*Gallus gallus domesticus*	<1	Joy and Divya, 2014
Distended abdomen, deppression, tail wagging	Palpation, radiography	Egg binding	Unclear (Silky bird)	2	Palanivelrajan et al., 2018
Labored breathing, tail wagging, distended abdomen	Palpation, radiography	Egg binding	*Psittacula eupatria*	3	Palanivelrajan et al., 2022
Anorexia, depression	Palpation	Egg binding	*Anas platyrhynchos domesticus*	2	Singh et al., 2017
Distended abdomen, depression	Palpation, radiography	Egg binding	Aseel hen	1	Thangamani et al., 2024
Lethargy, anorexia, abdominal mass	Palpation	Egg binding	*Gallus gallus domesticus*	<1	Ukaha and Okebaram, 2021

Table 4. Intervention characteristics for oviduct impaction, and incidence of prolapse cloaca following egg removal

Treatment	Prolapse occure	Post-treatment prescription	Author
Manual transcloacal remove	+	Antibiotic, multivitamin, calcium supplementation	Amin et al., 2019
Surgical treatment	-	Antibiotic, analgesic, Leuprolide acetate	Anderson et al., 2018
Surgical treatment	-	Antibiotic, analgesic	Anderson et al., 2018
Manual transcloacal remove	-	Antibiotic, multivitamin, analgesic	Apurva et al., 2022
Surgical treatment	-	Antibiotic, analgesic	Bel et al., 2015
Surgical treatment	-	ntibiotic, multivitamin, calcium supplementation , cortisol,	Bharathidasan et al., 2019
Manual transcloacal remove	-	Analgesic, calcium	Chaudhari et al., 2020
Manual transcloacal remove	-	Antibiotic, analgesic	Chaurasia et al., 2024
Surgical treatment	-	Antibiotic, analgesic, calcium, Leuprolide acetate	Clayton and Ritzman, 2006
Surgical treatment	-	Antibiotic, analgesic	Crouch, 2009
Surgical treatment	-	Antibiotic, analgesic	Devanand, 2019
Surgical treatment	-	Unknown	Gündüz et al., 2019
Surgical treatment	-	Unknown	Harcourt-Brown, 1996
Surgical treatment	-	Unknown	Harcourt-Brown, 1996
Surgical treatment	-	Unknown	Harcourt-Brown, 1996
Surgical treatment	-	Unknown	Honnas et al., 1993
Surgical treatment	-	Unknown	Honnas et al., 1993
Surgical treatment	-	Unknown	Honnas et al., 1993
Manual transcloacal remove	-	Antibiotic, calcium	Idrıs, 2022
Manual transcloacal remove and Surgical treatment	-	Antibiotic	Jos, 2020
Manual transcloacal remove	+	Antibiotic	Joy and Divya, 2014
Manual transcloacal remove	-	Antibiotic	Joy and Divya, 2014
Manual transcloacal remove	-	Unknown	Palanivelrajan et al., 2018
*Medical Treatment	-	Unknown	Palanivelrajan et al., 2022
Manual transcloacal remove	+	Antibiotic, calcium	Singh et al., 2017
Manual transcloacal remove	-	Antibiotic, analgesic, calcium	Thangamani et al., 2024
Surgical treatment	-	Antibiotic, analgesic	Ukaha and Okebaram, 2021

*orally calcium and cloacal paraffin liquid

Table 5. Manuel Transcloacal Removing Technic Characteristics

Species	Lubricant or local anesthetic	General Anesthesia	Author
Melopsittacus undulatus	Lignocaine HCl (2%) jelly	No	Amin et al., 2019
Psittacula eupatria	Lignocaine HCl (2%) jelly	No	Apurva et al., 2022
Melopsittacus undulatus	Liquid parafine	No	Chaudhari et al., 2020
Psittacula eupatria	Liquid parafine and lignocaine HCl (2%) jelly	No	Chaurasia et al., 2024
Gallus gallus domesticus	lignocaine HCl (2%) jelly	No	Idrıs, 2022
Gallus domesticus	Unknown lubricant	*Yes	Jos, 2020
Gallus gallus domesticus	Lignocaine HCl (2%) infiltration	**Yes	Joy and Divya, 2014
Gallus gallus domesticus	Lignocaine HCl (2%) infiltration	No	Joy and Divya, 2014
Unclear (Silky bird)	Liquid parafine	No	Palanivelrajan et al., 2018
Anas platyrhynchos domesticus	Lignocaine HCl (2%) jelly	No	Singh et al., 2017
Aseel hen	Liquid parafine and lignocaine HCl (2%) jelly	No	Thangamani et al., 2024

* Xylazine and Ketamine hydrochloride intamuscular. ** Ketamine hydrochloride intamuscular.

Table 6. Prognosis of patients after treatment

Species	Follow-up period	Result	Author
Melopsittacus undulatus	unknown	unknown	Amin et al., 2019
Aratinga nenday	5.5 years	No complication	Anderson et al., 2018
Eclectus roratus	18 months	No complication	Anderson et al., 2018
Psittacula eupatria	unknown	unknown	Apurva et al., 2022
Columba livia	unknown	unknown	Bel et al., 2015
Gallus gallus domesticus	30 days	No complication	Bharathidasan et al., 2019
Melopsittacus undulatus	unknown	unknown	Chaudhari et al., 2020
Psittacula eupatria	unknown	unknown	Chaurasia et al., 2024
Nymphicus hollandicus	73 days	No complication	Clayton and Ritzman, 2006
Sphrenicus demursus	18 months	No complication	Crouch, 2009
Columba livia domesticus	3 weeks	No complication	Devanand, 2019
Agapornis comprise	Unknown	Unknown	Gündüz et al., 2019
Nymphicus hollandicus	Unknown	Unknown	Harcourt-Brown, 1996
Nymphicus hollandicus	Unknown	Unknown	Harcourt-Brown, 1996
Nymphicus hollandicus	Unknown	Unknown	Harcourt-Brown, 1996
Dromaius novaehollandiae	6 months	No complication	Honnas et al., 1993
**Dromaius novaehollandiae*	2 months	Reoperation (hysteretomy)	Honnas et al., 1993
Dromaius novaehollandiae	1 month	Salphingitis	Honnas et al., 1993
Gallus gallus domesticus	Unknown	Unknown	Idrıs, 2022
Gallus domesticus	Unknown	Unknown	Jos, 2020
Gallus gallus domesticus	Unknown	Unknown	Joy and Divya, 2014
Gallus gallus domesticus	Unknown	Unknown	Joy and Divya, 2014
Unclear (Silky bird)	Unknown	Unknown	Palanivelrajan et al., 2018
Psittacula eupatria	Unknown	Unknown	Palanivelrajan et al., 2022
Anas platyrhynchos domesticus	Unknown	Unknown	Singh et al., 2017
Aseel hen	Unknown	Unknown	Thangamani et al., 2024
Gallus gallus domesticus	2 weeks	No complication	Ukaha and Okebaram, 2021

*After reoperation 5 months later bird was clinically normal.

Egg binding was the cause most frequently diagnosed through radiographic analysis and exploratory surgery in birds suffering from oviduct impaction. Hernia and torsion of oviduct was reported in three cases. In the analyzed articles, the range of ages was from one to 18 years. Four cases documented individuals younger than one year.

Results showed that surgical treatment (n=16/27) was mainly used for oviduct impaction, followed by manual transcloacal removal (n=11/27), and medical treatment (n=1/27). In one case, two eggs were present, and more than one method was presented because one of the eggs was removed manually, and the other was removed surgically. The analyzed study documented that prolapsus occurred following manual removal of the egg in three cases. In the manual transcloacal removal technique, two cases were reported to have used general anesthesia (Table 4). Nine authors in the reviewed studies did not provide information on post-intervention prescription. Other authors generally focused on antibiotics, calcium, and analgesics. Two authors also emphasized the importance of suppressing the ovarian activity with leuprolide acetate treatment. All the authors highlighted that lubricant or anesthetic jelly drugs help to remove the egg (Table 5).

According to the ten authors who followed the patients, no complications were observed during the follow-up period. In a study conducted by Honnas et al. (1993), two cases of complications arose following egg removal. The prognosis of patients described in Table 6 is discussed in detail.

Discussion

The unique anatomy and physiology of the avian reproductive tract result in a highly productive yet poorly accessible organ system. Affected birds are commonly presented with nonspecific lethargy, anorexia, coelomic swelling, and sometimes lay abnormal eggs (Echols and Speer, 2022; Vavlas et al., 2024).

The oviduct can be divided into five portions: infundibulum, magnum, isthmus, uterus, and vagina. An impaction may occur in one or all portions. The diagnosis of egg binding should be based on clinical signs, physical examination, and radiography. Suspicion should arise if the clinician is presented with a female bird with distended coelom and tenesmus (Harcourt-Brown, 1996; Orosz et al., 1997). Other signs might include abdominal swelling, tail wagging, or respiratory difficulty. We believe that pododermatitis, noted in a single case reported by Anderson et al. (2018), was related to the conditions of care. In cases where the eggshell is formed, palpation is sufficient for diagnosis. When diagnosis is not possible, the authors recommend using ultrasound, radiography, or tomography. Although blood tests were utilized in four cases, we believe they serve as an auxiliary diagnostic method for oviduct impaction. It is important to note that blood tests are particularly valuable for diagnosing dystocia caused by hypocalcemia or for obtaining information about the patient's condition.

A treatment protocol for oviduct impaction must be designed for clinical signs, patient condition, and etiology (Harcourt-Brown, 1996). This study proposes protocol focused on supplemental treatment, analgesia , and minimizing complications through antibiotics after egg removal or salpingohysterectomy. The study reported that no infection-related complications were observed in the follow-up of 7 cases who were prescribed antibiotics after the intervention. We recommend that patients be followed up annually to gather more accurate data.
The analyzed studies showed that surgical treatment (n=16/27) was mainly used for oviduct impaction. For surgical treatment, a common approach is a ventral midline approach (Vavlas et al., 2024).
There is little information on oviductal impaction and management of egg binding in wild birds. In the study, we analyzed cases where no reports were found in wild birds. Further studies are needed to classify the different presentations of reproductive diseases in female birds. Prospective studies with frequent and defined follow-up are required to assess therapeutic options and prognosis for birds with oviductal disease.

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Conflict of Interest

The authors declared that there is no conflict of interest.

Author Contribution Statement

K.G.Ö.: Methodology, data collection, writing manuscript
D.S.: Supervision, conceptualization, methodology, review and editing

Ethical Approval

Due to the non-experimental-inducted case reports, the present study was not subject to approval by the Ethical Committee.

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