

## SUCCESSFUL SURGICAL EXCISION OF OVARIAN REMNANT IN A QUEEN CAT

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### SUMMARY

A 2-year-old domestic short haired female cat was presented with intermittent estrus signs after being spayed three months back. A hormone challenge assay was done to confirm the diagnosis of ovarian remnant syndrome and the case was managed by surgical excision of ovarian remnant.

**Keywords:** Cat, Ovarian Remnant Syndrome

Ovariohysterectomy (OHE) is widely performed in queens as a means of population control and to eliminate unwanted behaviours associated with estrus. However, due to incomplete removal of ovarian tissue during ovariohysterectomy, a long term complication that arises is the ovarian remnant syndrome (ORS). The diagnosis of ORS in queens involves overt signs of estrus including vocalization, sexual receptivity, kneading and head rubbing. On the other hand, some queens may show subtler signs of estrus compared to the bitch. Despite the signs of estrus being variable among queens with ORS, a retrospective study from the Athens Veterinary Diagnostic Laboratory at the University of Georgia, 46 cases of ovarian remnants were submitted from 1988 to 1992; ORS was found to be more common in cats (29 cases) than in dogs (17 cases), with an average of 17 days to 9 years after OHE (Miller, 1995; Johnson, 2009). The present case study discusses about the diagnosis and surgical management of ORS in a queen cat.

A 2-year-old domestic short hair queen cat was presented to the Small Animal Obstetrics and Gynaecological unit of Madras Veterinary College with the history of intermittent estrus behaviour and increased vocalization for the past three months after being spayed. The owner also reported that spaying was done on the right flank region. On clinical examination, all vital parameters were within the normal range. The vulva was shrunken with no visible vaginal discharge. Due to high variability in length of the estrous cycle in queens and due to subtle changes in the vaginal smears, vaginal exfoliative cytology was not good technique to stage the cycle. Suspecting the case to be an ORS, challenge test was done wherein the cat was injected with 2µg of GnRH analogue, Buserelin Acetate (Gynarich®) IM, single serum sample collected on day 7 and 14 post injection and analyzed for progesterone and estrogen level (Table 1). Progesterone levels of more than 2ng/ml and estrogen levels of less than 20 pg/ml were

confirmative of the presence of a functional corpora lutea on the ovary (Wallace, 1991). Based on the hormone assay, the case was confirmed as ovarian remnant syndrome.

An exploratory celiotomy was performed using injectable anaesthesia. The queen was premedicated with Inj. Xylazine (@ 1mg/kg IM) and Inj. Ketamine (@5 mg/kg IM), and anaesthesia was maintained using a combination of Inj. Ketamine (@ 5 mg/kg IV) and Inj. Diazepam (@ 0.5mg/kg IV). By mid ventral approach, a large celiotomy incision was made to improve the chance of identification of ovarian tissue and the left ovary was ligated and excised. Post-operatively, the cat was treated with Tab. Cefpodoxime @ 20mg/kg PO for 5 days and she recovered uneventfully. Histological examination of excised tissue confirmed the presence of corpus luteum in the ovarian remnant (Fig. 2).

Ovarian remnant syndrome is a disorder characterized by the presence of ovarian function in a previously ovariohysterctomized bitch or queen. According to Nelson and Couto (2003), the most common cause of behavioural and physical signs of estrus after ovario-hysterectomy in a cat is remnant ovarian tissue that has regained folliculogenesis and production of estrogen. It occurs due to errors in surgical technique with the incomplete removal of one or both ovaries. The revascularization of ovarian remnants or the presence of supernumerary or ectopic ovaries in the abdomen can cause ORS (Miller, 1995). The ovarian tissue can remain hormonally functional and even ovulate. Performing OHE via the left flank may have limited access to the right ovary, thereby increasing the

**Table 1**

**Serum Progesterone and Estrogen values in the queen cat after GnRH Challenge test**

Days post GnRH injection	Progesterone (ng/ml)	Estrogen (pg/ml)
7	6	12.9
14	25	9.2

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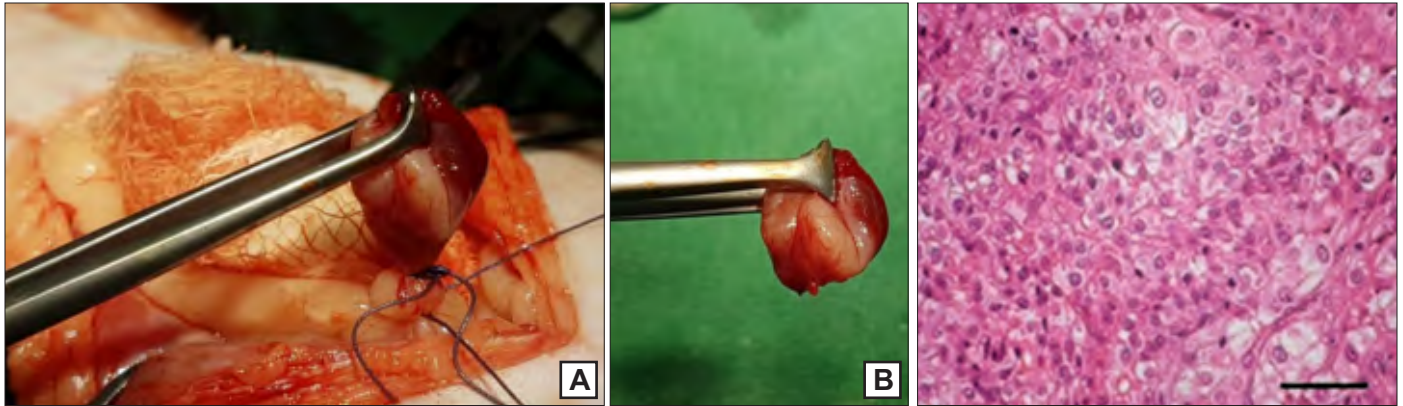


Fig. 1. (A) Resection of ovarian remnant in the queen Cat and (B) Ovarian remnant after Fig. 2. Ovarian remnant exhibiting formation process of the Corpus Luteum (10X magnification)

risk of incomplete resection of the ovary. Bilateral remnants are more common and in those animals with unilateral remnants, right ovarian remnants are more common, due to the anatomical position of the ovary cranial to the kidney. However, in the present case it was found to be left ovarian remnant.

The diagnosis of ORS in queens involves a combination of behavioural signs, vaginal cytology, and blood hormonal determinations. In an ovariohysterctomized queen, vaginal smears will resemble those of a queen in anestrus whereas, presence of cornified cells with absent or pyknotic nuclei indicate estrogenic influence. Since, the changes in the smear are very subtle, it cannot be used to rule out ORS. Similarly, ultrasonography is a poor diagnostic tool in small animal with remnant ovary due to its small hypoechoic ovarian mass. Hence, the most efficient diagnostic aid for ORS is a GnRH challenge test. The goal of this was to cause ovulation of a follicle by exogenous LH-like compounds, thus confirming the presence of functional ovarian tissue (Heffelfinger, 2006).

Treatment of ORS includes leaving the ovarian remnant intact if the owner can tolerate estrus behaviour,

medical therapy or surgical removal of the ovarian remnant. Medical therapy includes administration of synthetic progestogens or androgens or GnRH analogue (Olivara *et al.*, 2012). Surgical therapy includes examination of both the ovarian pedicles for retained or accessory ovaries. Thus, ovarian remnants in a cat could be suspected based on history of previous OHE followed by behavioural evidence of estrus and hormonal assay may support the presence of ovarian remnants.

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