A 2½ year old female Labrador bitch, weighing 26 Kg, was presented to the clinics of the Department of Veterinary Gynaecology and Obstetrics, Veterinary College, Bengaluru with a history of vaginal bleeding for the last three days. This primiparous animal delivered nine live pups 50 days back and had the normal puerperal vaginal discharge for nearly 15 days, then it subsided. The pups were weaned by 40 to 45 days. The bitch showed a few drops of serosanguinous vaginal discharge on day 48 postpartum, which increased in quantity day by day and was presented to the clinic for treatment.

On clinical examination, the animal was found to be active with normal physiological parameters. Mucous membranes were slightly pale. There was spotting of fresh unclotted blood from the vagina. Per-vaginal examination couldn’t reveal any tumour or other lesions. Ultrasonography revealed slightly distended uterus with anechoic areas anterior to the urinary bladder. Free fluid accumulation in abdominal cavity suggestive of ascites was also observed. Smears were collected from vaginal tract and stained with Giemsa’s stain, which revealed mostly binucleate trophoblast cells as seen in histopathological examination. The animal was diagnosed with subinvolution of placental sites (SIPS) and treated with plasma volume extenders and other supportive medications, which lead to an uneventful recovery. Impression smears from placental sites revealed binucleate, heavily vacuolated trophoblast like cells. Histopathology showed dilated endometrial glands, surrounded by collagen. Trophoblast like cells were seen beneath the collagen layer, myometrium and around the blood vessels. Diagnostic and therapeutic measures adopted in a case of SIPS were described.

Keywords: Subinvolution, Placenta, Trophoblast like cells, Dog.
platelet count of 2,12,000/µl and serum creatinine and SGPT levels of 1.3 mg/dl and 58U, respectively.

Based on history, clinical findings, ultrasonography, haematology and cytological studies, the case was tentatively diagnosed as SIPS. Since the animal was anaemic and there was increased blood loss from vagina and the owner wanted to sterilize the animal, it was decided to perform ovariohysterectomy.

**Treatment and Discussion**

Ovariohysterectomy was performed as per standard surgical procedures under general anaesthesia. Animal was treated parenterally with antibiotics (Cefazoline @ 20 mg/Kg. body weight), analgesics (Tramadol @ 1 mg/Kg. body weight), plasma volume extenders (Hetastarch 6 % solution @ 10 ml/ Kg. body weight) and intravenous fluids (Ringer lactate @ 10 ml/ Kg. body weight) for the next three days. Oral antibiotic therapy and alternate day wound dressing was followed for next one week. The sutures were removed on the 10th postoperative day and the animal had an uneventful recovery.

On gross examination, the uterine horns were not fully involuted, distended and all placental attachment sites could be appreciated from the serosal surface. Two placental sites on left and five placental sites on right horns were hyperaemic, ellipsoidal, thin walled and more distended. Both ovaries contained regressing corpora lutea (Fig.-1). Uterine horns were partially filled with clotted blood. Placental sites were clearly visible, haemorrhagic with 10 to 12 greyish varying sized (2 to 4 mm) nodules spread randomly over each site (Fig.-2). Impression smears were collected from these placental sites, stained with Giemsa’s stain, which revealed mostly binucleate, heavily vacuolated trophoblast like cells (Fig.-3). Representative tissue samples were collected from uterine horns, preserved in 10% buffered formol saline and processed for histopathological studies.

![Fig.-1 Canine uterus showing haemorrhagic, Fig.-2 Canine uterus showing thickened endometrium with greyish nodules](image1)

![Fig.-3 Binucleated heavily vacuolated trophoblast like cells (400X)](image2)

The cause of subinvolution is not fully known, but this process may be a manifestation of an abnormal interaction between fetal-derived trophoblast and maternal tissue as also mentioned by Weydert and Benda, 2006. In vitro studies using...
canine trophoblast cells showed that interleukin–8 (IL-8) increased cell migration by 35% and tissue inhibitor of metalloproteinase –2 (TIMP-2) decreased cell invasion by 57% as also recorded by Gullaba, 2013. Bitches showing SIPS are normal except for metrorrhagia for several weeks postpartum. The blood loss may range from a few drops per day that subsides without any treatment to life threatening metrorrhagia that requires blood transfusion and surgery. In the present case also, the blood loss increased day by day and the animal became moderately anaemic and developed ascites. Therefore ovariohysterectomy was preferred before the condition of the animal further deteriorated. The animal was stabilized with plasma volume extenders and fluids postoperatively.

Diagnosis can be made from the transcervical vaginal endoscopy to identify trophoblast persistence as also mentioned by Schlafer, 2012, trans-abdominal palpation of uterine swellings, which can be confirmed by radiography or ultrasonography. Detailed anatomical and histological studies of postpartum uterus indicated that normal involution of uterus in bitch can last up to three months similarly reported by Orfanou et al., 2008.

Since spontaneous remission occurs, most of the cases may not require any treatment. Ovariohysterectomy may be indicated in severe blood loss or ulceration of endometrium/ myometrium leading to perforation and subsequent peritonitis. Blood transfusion may be recommended in severely anemic cases. Hysterolaparotomy with curettage of selected placental sites and Ergonovine @ 0.2 mg/15 Kg. body weight as single dose intramuscularly Oral administration of low doses of progestagen for two weeks (Megestrol acetate, 0.1 mg/Kg., body weight once daily for the first week, then 0.05 mg/Kg. body weight once daily for the second week) was found effective in treating SIPS, with neither side effects nor subsequent reduced fertility as also mentioned by Voorhorst et al., 2013. This indicated that supplementation of progesterone will help in the endometrial repair process. Spontaneous full recovery of a SIPS case in an American Staffordshire terrier as was reported by Sontas et al., 2011. It was concluded that occurrence of SIPS does not affect the subsequent oestrus, fertility, gestation and parturition as also recorded by Voorhorst et al., 2013 and the condition does not necessarily develop following subsequent pregnancies. Administration of a dose of oxytocin in postpartum bitches was suggested to prevent the occurrence of SIPS.

References
Gullaba, J.M. (2013). Role of IL-8 and TIMP-2 on Term Canine Trophoblast Migration, Invasion, and Proliferation. M.Sc. thesis submitted to the Oregon State University, USA.