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Videoendoscopic assisted laser photoablation of endometrial cysts is an effective method of cyst reduction. The group of mares in this review had been barren for at least one breeding season. Following laser treatment a high percentage of these mares conceived. Authors’ address: Equine Services Surgical Hospital, P.O. Box 464, Simpsonville, KY 40067. © 2002 AAEP.

1. Introduction

Endometrial cysts have been previously described as originating from uterine glands or from lymphatic lacunae.1–3 Glandular cysts have been described as being <10 mm in diameter, with a significance that is largely unknown.4 Lymphatic cysts, however, are lymphatic lacunae that can be significantly larger than 10 mm in diameter. Ragon reported that these cysts could be found in the endometrium or myometrium. The cysts may appear as unilocular or multilocular, be round or elongated, and their presence is associated with both normal and chronically inflamed endometria.5

Ragon also stated the prevalence of glandular cysts is unknown, but regardless of the population of mares studied (fertile or subfertile), the incidence of lymphatic cysts increases with age.5 In one study, 73.1% of mares over 14 yr of age had endometrial cysts.6 In a study of mares acquired from a slaughter-house market, the mean age of mares with endometrial cysts was reported to be 13.4 yr of age.7

Uterine cysts are most commonly diagnosed by ultrasonography. Prior to the advent of transrectal ultrasound, postmortem examination was the most common method of diagnosis.8 Recently hysteroscopy has become more common in equine practice. Hysteroscopy allows for a thorough visual inspection of the uterus and potential pathology, which other diagnostic procedures cannot provide. Hysteroscopy has been found to be a useful diagnostic technique, and has been used on a routine basis at Equine Services since 1977.a

The effect of uterine cysts on fertility has been debated. McKinnon et al suggested that the relationship between infertility and uterine cysts was axiomatic.4 These authors also stated that later in pregnancy, contact between the cyst wall and yolk sac or allantois may prevent absorption of nutrients. Ragon noted in her review that the presence of uterine cysts has been associated with decreased conception rates, increased early embryonic death, and decreased foaling rates.5 It has also been shown that endometrial cysts are closely associated with increasing age and biopsy scores.7 This makes the specific effect of uterine cysts on infertility difficult to predict. The purpose of this study was to determine the conception rate in a group of previously barren mares, after photoablation of endometrial lymphatic cysts with Nd:YAG laser.
2. Materials and Methods

Records of fifty-five barren mares presented for photoablation of endometrial cysts during 2000 and 2001 were reviewed. Of the cases seen, three mares were evaluated twice. The mares were placed in stocks and sedated to effect with a combination of detomadine\(^6\) (0.01–0.02 mg/kg, i.v.) or xylazine\(^6\) (0.3–0.4 mg/kg, i.v.) and butorphanol\(^4\) (0.01–0.02 mg/kg, i.v.). The rectum was emptied of manure, and the tail was wrapped and secured out of the working area. The perineal region was then thoroughly cleansed for aseptic procedure. The operator is gloved with a sterile sleeve. A one-meter length of a laser system with a 4-m long, 800-nm fiber is visible. An Nd:YAG fiber is guided to a cyst and placed in contact with it. Coaxial cooling is not used with this contact fiber. The laser output is set at 15 W. It is helpful to start at the tip of a horn and work in a posterior direction. The tip of the laser fiber is guided to a cyst and placed in contact with the central dome of the cyst and energy is applied. The cyst is photoablated until all lymphatic fluid has leaked out and the cyst is reduced in size. Once fluid empties, the remaining cystic tissue will collapse around the fiber and reduce back to the level of the endometrium as energy is applied. Energy may have to be applied to several points on a large cyst in order to accomplish this. If numerous lymphatic cysts are present, the uterus may have to be emptied of air and smoke, then re-insufflated in order to clearly visualize all cystic structures. When all cysts have been satisfactorily ablated, all air is emptied from the uterus. If uterine biopsy is to be done, it should be done following cyst reduction.

The perineal region can then be cleansed again and a Foley catheter is passed in order to lavage the uterus. The uterus is lavaged with 1 L of 7% hydrogen peroxide in sterile saline, followed by a 2% povidone iodne solution in sterile saline. It is felt that the hydrogen peroxide lavage helps to effectively remove debris resulting from the procedure. The follow-up povidone iodne solution is used as an anti-microbial lavage, to aid in prevention of possible infection secondary to the procedure. The recommended take-home instructions include lavage of the uterus twice more before breeding the mare.

3. Results

The 55 mares in this case review had been barren for at least one season. A total of 269 cysts were photoablated. Many cysts were multiloculated structures that were counted as one cyst. The mean age of this group of mares was 18.8 yr, with a median of 18 yr of age. The range was from 13, to a group of four mares, all 24 yr of age. The cysts were divided as to their location within the uterus. They were divided into four groups; those in the left horn, right horn, at the corpus-cornual junction and in the uterine body. In this group of mares, 21.6% of cysts were located in the left horn, 28.2% of cysts were in the right horn, 16.4% of cysts were at the corpus-cornual junction, and 33.8% of cysts were in the uterine body.

Follow-up of the 29 mares treated in the year 2000 was attempted. Of these mares, 25 were located for further information. Of the four lost to follow-up, one had died, and we were unable to contact the owners of the other three. Of the 25 available, 18 had conceived in either 2000 or 2001. These mares were bred an average of 2.3 cycles per conception. Mares that conceived had an average of six cysts. The group of mares that did not conceive had an average of five cysts.

Follow-up data on the mares treated during 2001 was obtained for 14 mares. Of this group, eight are known to have conceived. They were bred an average of 1.4 cycles per conception. Of the six that did not conceive, one was retired from breeding due to age, and another was diagnosed with a granulosa cell tumor. Mares that conceived had an average of 7 cysts, whereas those that did not had an average of 4 cysts.

4. Discussion

As has been previously stated lymphatic cysts have been associated with infertility in the mare. Tannous and Thun found that pregnancy rates at 14 d and 40 d were significantly lower in mares with cysts compared to mares without cysts. Several different methods describing removal of endometrial cysts were previously reviewed. These include me-
mechanical curettage, hypertonic saline infusions, aspiration, rupture with endoscopic biopsy instruments, electrocoagulation, and photoablation with laser.4

Blikslager et al. previously described a technique for photoablation of uterine cysts with Nd:YAG laser on a small group of mares, both in vivo and in vitro.11 They used a coaxial cooled fiber, at much higher power than is described in this paper. In vivo, they performed the procedure in two stages. Initially they were placing the probe 1 cm from the cyst surface, blanching the entire cyst at 50 W. This was followed by membrane puncture at 100 W. We have not found this level of power to be necessary in order to adequately photoablate uterine cysts. Their in vitro study also described creating Grade 4 lesions by using high-energy densities. This is obviously undesirable in clinical cases.

Nd:YAG laser has been used for treatment of endometrial cysts at Equine Services since 1986. We have found Nd:YAG laser to be an effective, affordable treatment for ablation of intrauterine cysts. Continued follow-up of mares, including the live foal rate of those that conceived following this procedure, would provide further valuable information regarding the usefulness of this procedure.

References and Footnotes


*Personal communication, Dr. Scott Bennett, Equine Services, Simpsonville, KY, 2002.

**Dormosedan®, Orion Corp., Espoo, Finland.

*Xyla-Ject®, Phoenix Pharmaceuticals, St. Joseph, MO 64503.


*Pentax Precision Instrument Corp., Orangeburg, NY 10962.

*CIDEX plus® Johnson and Johnson Co., Irvine, CA 92618.