**CLIENT EDUCATION HANDOUT**

**Customer Name, Street Address, City, State, Zip code**

**Phone number, Alt. phone number, Fax number, e-mail address, web site**

**Equine Oocytes and Intracytoplasmic Sperm Injection (ICSI)**

**Basics**

**Overview**

**•** ICSI is a method for in vitro fertilization in which a single sperm is injected into the cytoplasm of a mature oocyte to achieve fertilization. The resulting fertilized oocytes are cultured for 7–10 days to allow them to develop into blastocysts, which can then be transferred transcervically into a recipient mare, as for standard embryo transfer

**Signalment**

**•** Oocytes can be recovered from mares of any age, although recovery is more commonly performed in older mares that are unable to carry foals to term or deliver foals themselves, or when pregnancies are sought from stallions with a limited supply of spermatozoa

• Oocytes can be recovered from mares of any breed; however, owners should consult individual breed registries for guidelines regarding the possibility of registering any resulting foals

**Treatment**

**Appropriate Health Care**

**•** Oocyte recovery from live mares is best performed in a hospital setting with adequate facilities for mare restraint and trained personnel experienced in follicular aspirations

• ICSI is performed in a laboratory equipped with the proper equipment (micromanipulator, incubator, hood, microscope, etc.) by trained personnel knowledgeable in embryo culture medium preparation and experienced in oocyte and embryo handling, sperm preparation, and micromanipulation

• Ovaries from euthanized mares can be shipped to the ICSI laboratory for oocyte recovery, maturation, and ICSI. Alternatively, the referring veterinarian can recover oocytes from the ovaries and ship the oocytes to the ICSI laboratory for maturation and ICSI

**Indications**Subfertile mares that cannot provide embryos for transfer because of chronic endometritis, pyometra, uterine adhesions, cervical tears, persistent anovulatory follicles, oviductal blockage, or idiopathic causes

• Subfertile stallions with very low sperm numbers or poor quality of ejaculate and/or individual spermatozoa

• When only a few straws of frozen semen exist from deceased stallions

• When oocytes are recovered from mares’ ovaries after euthanasia

**Activity**

**•** Restricted while the mare is under sedation

**Diet**

**•** Normal diet

**Surgical Considerations**

**•** If an ovarian abscess develops following oocyte recovery, surgery may be indicated to remove the affected ovary

**Medications**

**For Oocyte Recovery via Flank Aspiration or TVA**

**•** Drugs for sedation and analgesia

**•** Antibiotics if complications occur during the procedure

**For Oocyte Recovery from Ovaries Postmortem**

**•** Anesthesia followed by euthanasia after ovary removal

**Follow-Up**

**Patient Monitoring**

**•** Follicular aspirations of immature or dominant stimulated follicles can be performed once every 2 weeks. If aspirating a dominant stimulated follicle, follicular growth must be monitored by transrectal ultrasonography

**Possible Complications**

**•** Rectal bleeding

**•** Ovarian abscess

**•** Peritonitis

**•** Death from puncture of uterine artery

**Expected Course and Prognosis**

The expected outcomes will vary by laboratory. At the Texas A&M Equine Embryo Laboratory the expected outcomes are:

**•** 66% of immature oocytes mature in culture

**•** 75% of oocytes undergo cleavage after ICSI

**•** 23% of oocytes recovered from immature follicles, subjected to ICSI, will develop blastocysts

**•** 38% of oocytes recovered from dominant stimulated follicles, subjected to ICSI, will develop blastocysts

**•** 52% foaling rate per transferred blastocyst

**Key Points**

**•** Oocyte recovery by flank aspiration or transvaginal aspiration is a relatively benign procedure; however, certain complications, listed above, can occur

**•** Performing ICSI is much more labor intensive and expensive than standard embryo transfer

**•** ICSI is a procedure that should only be used when the indications listed above are present

**•** ICSI is not a recommended means of obtaining more foals in a given season from normally fertile mares using good quality semen



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