

Table 9-3.

Embryo grade assignment based on a 4-point system. Modified from the Manual of the International Embryo Transfer Society (IETS).

Grade	Comment	Description
1	Excellent	No significant abnormalities observed; symmetrical and spherical in shape; cells of uniform size, color and texture; size and developmental stage appropriate for age post-ovulation
2	Good	Minor imperfections, such as a few extruded blastomeres; slight irregularities in shape, size, color, or texture; limited separation between trophoblast layer and zona pellucida or capsule
3	Poor	Moderate level of imperfections, such as a larger percentage of extruded or degenerated blastomeres; partial collapse of blastocoele; or moderate shrinkage of trophoblast from zona pellucida or capsule
4	Degenerate or Dead	Severe problems easily identified, such as a high percentage of extruded blastomeres, complete collapse of blastocoele, rupture of zona pellucida, or complete degeneration and embryonic death

Occasionally a normal equine embryo recovered at day 7 postovulation is observed to have a few cells or even a spermatozoon attached to the zona pellucida (Figures 9-18 through 9-21). These cells may be cumulus cells still attached to the zona pellucida and are of little to no clinical consequence.

Adherence of multiple clumps of cells or other material to the zona pellucida may be a sign of endometritis in the donor mare or contamination of the flush procedure. Affected embryos should be washed as thoroughly as possible and consideration should be given to treatment of the recipient mare with broad spectrum antibiotics beginning at the time of transfer and continuing for the subsequent 5 to 7 days. The presence of debris attached to the outside of the embryo does not influence the assignment of grade. Grade is assigned based solely on morphologic characteristics of the embryo. The presence of external debris is clinically important and is recorded as additional comments.

The vast majority of embryos collected from donor mares are good to excellent in quality (Table 9-4). This is likely due to the selective transport of viable embryos through the oviduct. Poor quality embryos, dead embryos, and unfertilized oocytes are likely retained in the oviduct. Practitioners are faced with a decision when an embryo of poor quality is recovered, as transfer success of Grade 3 and 4 embryos is significantly lower than that of Grade 1 or 2 embryos and embryonic loss rate is higher. However, one certainty is that an embryo has no chance of survival if it is not transferred. It is recommended that all embryos be transferred, regardless of grade, if a recipient mare is available.



Figure 9-18. Grade 2 morula stage embryo with a sperm in zona pellucida (arrow).

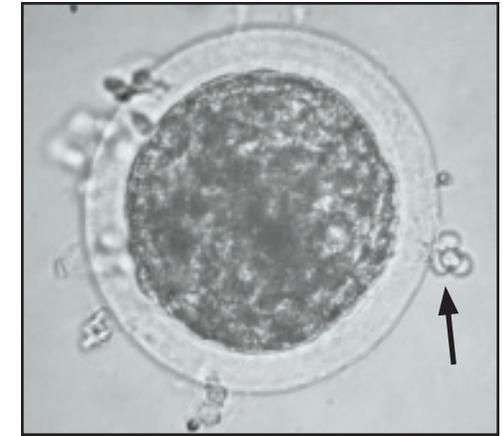


Figure 9-19. Grade 1 early blastocyst stage embryo. Note cumulus cells adhering to zona pellucida (arrow).

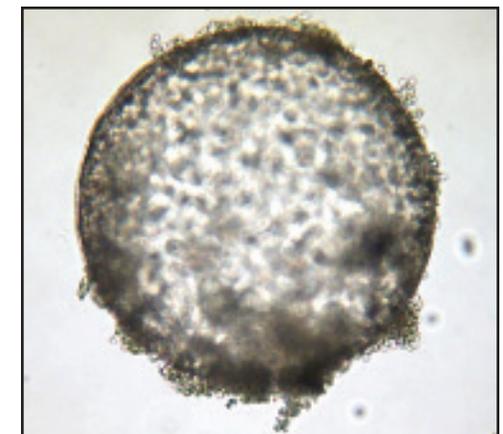


Figure 9-20. Blastocyst stage embryo with debris adherent to outside of zona pellucida.