Effect of site of transfer on pregnancy and twinning rates following bilateral egg transfer in the cow

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High pregnancy and egg survival rates can be achieved following surgical egg transfer techniques in the cow (Rowson, Lawson & Moor, 1971; Sreenan, Beehan & Mulvehill, 1975). The application of such techniques under farm conditions requires the development of simple non-surgical transfer techniques, but attempts to develop such procedures have so far resulted in pregnancy and egg survival rates much lower than those achieved by surgical techniques (Rowson & Moor, 1966; Sreenan, 1975; Lawson, Rowson, Moor & Tervit, 1975; Boland, Crosby & Gordon, 1975), perhaps because of egg expulsion or the introduction of uterine infection (Rowson, Lamming & Fry, 1953; Rowson, Bennett & Harper, 1964). More recent work indicates a trend towards improved pregnancy rates when non-surgical transfers are carried out between Days 6 to 9 of the oestrous cycle rather than earlier (Lawson *et al.*, 1975; Sreenan, 1975).

The present work was carried out to determine whether site of transfer by surgical methods had any effect on pregnancy and egg survival rates.

Superovulation was induced in donor animals (Hereford-cross heifers) weighing 300–360 kg by i.m. injections of 2000 i.u. PMSG (Intervet), followed by 500 µg cloprostenol (I.C.I. 80,996, a prostaglandin analogue) 48 and 72 hr later. The donor heifers were artificially inseminated at the induced oestrus with frozen semen. Recipients were Hereford-cross heifers weighing 275–350 kg. Oestrous cycles in the recipients were exactly synchronized with those of the donor animals by i.m. injection of 500 µg cloprostenol during the luteal phase of the cycle. In one group of randomly chosen recipients, one fertilized egg was transferred to the tip of each uterine horn approximately 40 mm from the uterotubal junction. In the second group, one fertilized egg was transferred to the lower part of each uterine horn near the common body of the uterus. The point of entry of the transfer pipette in this group was at the external attachment of the uterine horns. All eggs were transferred in 0.20 ml medium (TCM 199) and were expelled towards the ovarian end. Fertilized eggs from the same donor were transferred within 120 min of recovery to all the animals in each group. Egg recovery and transfer was carried out surgically under closed circuit anaesthesia as previously described (Sreenan *et al.*, 1975). Pregnancy rate and site of egg survival was established following slaughter of all the recipients at 30 days from the day of oestrus before the transfer. Egg survival rates were based on recovery of viable embryos at slaughter.

The results of the transfers are given in Table 1. There was no difference in pregnancy or egg survival rates relative to site of transfer within the uterus when transfers were carried out from Days 6–8 of the cycle. The position of the fertilized eggs relative to the CL did not seem to affect survival. The overall pregnancy rate of 75% and twinning rate of 66.6% are in agreement with previous reports (Rowson *et al.*, 1971; Sreenan *et al.*, 1975).

The data presented here show that the surgical transfer of 6–8-day-old fertilized eggs to a position near the common body of the uterus did not reduce their survival rate. While this finding cannot be directly extrapolated to non-surgical transfer methods, it does indicate that site of transfer would be worth testing in such experiments.

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Table 1. Effect of site of transfer on egg survival in heifers after bilateral egg transfers

Animal No.	Day of egg transfer	Transfer near uterotubal junction		Animal No.	Day of egg transfer	Transfer near common uterine body	
		+CL	-CL			+CL	-CL
736	5	—	—	735	4	—	—
721	6	+	d	643	5	+	—
709	7	—	—	727	6	+	+
710	7	—	+	713	7	+	+
717	7	+	+	691	7	+	+
673	7	+	+	705	7	—	—
692	7	d	+	694	8	+	+
700	7	+	+	509	8	+	d
712	8	+	+	724	8	+	+
649	8	+	+	707	8	d	d

+CL = uterine horn ipsilateral to CL; -CL = uterine horn contralateral to CL; + = viable embryo; d = degenerating embryo.

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