**Supplemental Figure S1** – Luteal volume, color Doppler ultrasonography scores (0 to 4), follicle diameter, and serum concentration of progesterone (P4) throughout the estrous cycle in a lactating dairy cow with typical cycle from each treatment. Cows in the Control group did not receive any treatment. Cows in the hCG7 group received 3,300 I.U. of hCG 7 days after the last GnRH (d 7 of the estrous cycle). Cows in the hCG7&13 group received 3,300 I.U. of hCG on d 7 and a second treatment with hCG on d 13 of the estrous cycle. Transrectal ultrasonography and blood collection were performed on d -2 and daily from d 0 until spontaneous ovulation. After d 16 of the estrous cycle, Doppler ultrasonography was performed in each CL until two consecutive days with blood flow ≤ 25% in all corpora lutea of each cow.

**Cow 6072 – Control group – Typical cycle**

![Graphs showing luteal volume, Doppler scores, follicular waves, and serum P4 concentration throughout the estrous cycle.](image-url)
Cow 5258 – hCG7 group – Typical cycle

**Luteal volume**
- Original CL
- CL induced by hCG (d7)

**Doppler scores**
- Original CL (d0)
- hCG7 (d7)

**Follicular waves**
- 1st wave DF
- 2nd wave DF
- 3rd wave DF

**Serum P4**
- Serum P4 (ng/mL)
Cow 8560 – hCG7&13 group – Typical cycle
Supplemental Figure S2 – Luteal volume, follicle diameter, and serum concentration of progesterone (P4) throughout the estrous cycle in a lactating dairy cow with a short cycle in Control. Only one follicular wave was observed and the interovulatory interval was 16 d. DF = dominant follicle, S1 and S2 = subordinate follicles

Cow 6203 – Control – Short cycle
Supplemental Figure S3 - Luteal volume, follicle diameter, and serum concentration of progesterone (P4) throughout the estrous cycle in a lactating dairy cow from each treatment with atypical cycle classified as delayed ovulation. Delayed ovulation was defined in cows that the DF or future DF at the time of the onset of luteolysis did not ovulate (delayed ovulation). DF = dominant follicle

Cow 6426 – Control group – Delayed ovulation

Cow 7873 – hCG7 group – Delayed ovulation
Cow 7582 – hCG7&13 group – Delayed ovulation
Supplemental Figure S4 - Luteal volume, follicle diameter, and serum concentration of progesterone (P4) throughout the estrous cycle of two lactating dairy cow two cows in Control with an atypical cycle with delayed onset of luteolysis (delayed luteolysis).

Cow 6487 – Control group – Delayed luteolysis

Cow 8927 – Control group – Delayed luteolysis
Supplemental Figure S5 – Luteal volume, color Doppler ultrasonography scores (0 to 4), and serum concentration of progesterone (P4) throughout the estrous cycle in a lactating dairy cow from each treatment with atypical cycle classified as incomplete luteolysis.

Cow 5498 – Control group – Incomplete luteolysis

Cow 6499 – hCG7 group – Incomplete luteolysis
Cow 8938 – hCG7&13 group – Incomplete luteolysis

- **Luteal volume**
  - Original CL
  - CL induced by hCG (d7)
  - CL induced by hCG (d13)

- **Doppler scores**

- **Serum P4 (ng/mL)**

Days of the estrous cycle:

- Volume (x 1000 mm$^3$)
- Doppler score
- Serum P4 (ng/mL)