## Supplementary Table 1: Morphometric and textural features and associated meaning

| Feature                             | Meaning                                                                 |
|-------------------------------------|------------------------------------------------------------------------|
| **Volume**                          | Morphometric measure of total placental volume, in cm$^3$               |
| **Thickness**                       | Morphometric measure of the maximal thickness between placental surface adjacent to the uterus and fetal surface, in mm |
| **Elongation**                      | Morphometric measure of placental length, accounting for curvedness, in mm |
| **Normalized mean grey level**      | Measures the average grey level for all pixels in an image, normalized per patient |
| **Normalized variance**             | Measure of coarseness; describes the variance in grey level values; low values reflect image homogeneity |
| **Kurtosis**                        | Measure of uniformity; using the pixel histogram, measures magnitude of distribution; high values reflect greater uniformity |
| **Skewness**                        | Measure of asymmetry; using the pixel histogram, measures distribution of grey values; low values reflect more low grey |
| **Energy**                          | Measure of homogeneity; higher values have higher orderliness, reflecting homogeneity |
| **Entropy**                         | Measure of homogeneity; higher values have higher regularity, reflecting homogeneity |
| **Inverse different movement**      | Measure of homogeneity; higher values reflect more homogeneity |
| **Inertia**                         | Measure of local homogeneity; low values reflect more homogeneity |
| **Cluster shade**                   | Measure of asymmetry; low values reflect greater symmetry |
| **Cluster prominence**              | Measure of asymmetry; low values reflect small variation in grey levels or greater symmetry |
| **Short run emphasis**              | Measure of coarseness; high values reflect greater distribution of short runs in an image or finer texture |
| **Long run emphasis**               | Measure of coarseness: high values reflect greater distribution of long runs in an image or coarser texture |
| **Grey level non-uniformity**       | Measures similarity of grey level values; low values reflect greater similarity of grey values |
| **Run length non-uniformity**       | Measures similarity of run lengths; low values reflect similar run lengths |
| **Low grey level emphasis**         | Measures runs of low grey levels; high values reflect images with more runs of low grey levels |
| **High grey level emphasis**        | Measures runs of high grey levels; high values reflect images with more runs of high grey levels |
| **Short run low grey level emphasis** | Measures short runs and low grey levels; high values reflect images with many short runs and low grey levels |
| **Short run high grey level emphasis** | Measures short runs and high grey levels; high values reflect images with many short runs and high grey levels |
| **Long run low grey level emphasis** | Measures long runs and high grey levels; high values reflect images with many long runs and high grey levels |
| **Long run high grey level emphasis** | Measures long runs and high grey levels; high values reflect images with many long runs and high grey levels |

*Complementary metric to feature immediately preceding it

References: 1. Castellano G, Honilha L, Li LM, and Cendes F. Texture analysis of medical images. Clinical radiology. 2004; 50:1061-1069. 2. Davnall F, et al. Assessment of tumor heterogeneity: an emerging imaging tool for clinical practice? Insights Imaging. 2012 Dec; 3(6): 573-589. 3. Korfiatis P and Kline T. MRI texture features as biomarkers to predict MGMT methylation status in glioblastomas. Med Phys. 2016 Jun; 43(6):2835-44.
| Feature                               | Control (n = 32) | FGR (n = 34) | p-value<sup>b</sup> |
|---------------------------------------|-----------------|--------------|------------------|
| **Volume**                            | 639.28          | 485.40       | 0.0004           |
| **Thickness**                         | 57.57           | 51.93        | 0.03             |
| **Elongation**                        | 177.17          | 165.96       | 0.03             |
| **Normalized mean grey level**        | 3.74            | 4.55         | 0.01             |
| **Normalized variance**               | 0.63            | 0.69         | 0.32             |
| **Kurtosis**                          | 0.19            | 0.11         | 0.05             |
| **Skewness**                          | 0.20            | 0.11         | 0.005            |
| **Energy**                            | 0.30            | 0.30         | 0.99             |
| **Entropy**                           | 2.50            | 2.40         | 0.48             |
| **Inverse different movement**        | 0.85            | 0.85         | 0.80             |
| **Inertia**                           | 0.35            | 0.34         | 0.85             |
| **Cluster shade**                     | 2.13            | 0.94         | 0.009            |
| **Cluster prominence**                | 20.95           | 11.73        | 0.009            |
| **Short run emphasis**                | 0.75            | 0.85         | 0.0009           |
| **Long run emphasis**                 | 3.91            | 3.23         | 0.43             |
| **Grey level non-uniformity**         | 4618            | 5707         | 0.02             |
| **Run length non-uniformity**         | 8174            | 12318        | 0.005            |
| **Low grey level emphasis**           | 0.21            | 0.26         | 0.23             |
| **High grey level emphasis**          | 10.12           | 9.16         | 0.40             |
| **Short run low grey level emphasis** | 0.15            | 0.20         | 0.02             |
| **Short run high grey level emphasis**| 8.53            | 8.16         | 0.74             |
| **Long run low grey level emphasis**  | 1.40            | 1.65         | 0.73             |
| **Long run high grey level emphasis** | 23.79           | 16.67        | 0.0001           |

<sup>a</sup> Means and p-values controlling for gestational age estimated using generalized linear mixed models with log-link function.

<sup>b</sup> Numbers in bold significant at p < 0.05.
Supplementary Figure 1: A: T2W axial slice of maternal abdomen, B: manual segmentation of placenta outlined in white, C: the reconstructed 3D placental mesh