MATERNAL OBESITY, STILLBIRTH RISK AND SMALL-FOR-GESTATIONAL AGE BIRTHWEIGHT

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BACKGROUND
Maternal obesity is associated with an increased risk of stillbirth. The study assessed the risk of stillbirth in different categories of BMI, and their association with the rate of small for gestational age (SGA) babies.

METHOD
The cohort consisted of 48,357 consecutive pregnancies delivered in one of 6 participating maternity units as part of routine maternity data collection in the West Midlands. Rates of SGA at birth were assessed by two methods: SGA based on the local weight-for-gestational age standard ('population SGA'), or the individually adjusted fetal growth potential ('customised SGA').

RESULTS

- 10.5% of mothers had a BMI <20, and 7.8% a BMI of 35+.
- Stillbirth rates rose incrementally from low to high BMI groups.
- SGA rates by population based centiles showed a downward trend with increasing BMI, contrary to the stillbirth rate.
- SGA rates based on the customised fetal growth potential in the higher BMI groups followed the increasing stillbirth rate.

<table>
<thead>
<tr>
<th>BMI group</th>
<th>Total</th>
<th>% in each BMI group</th>
<th>Stillbirths total</th>
<th>SGA population standard</th>
<th>SGA customised standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;20</td>
<td>5076</td>
<td>10.5</td>
<td>14</td>
<td>22.2</td>
<td>18.5</td>
</tr>
<tr>
<td>20-24.9</td>
<td>13003</td>
<td>41.0</td>
<td>122</td>
<td>16.1</td>
<td>15.9</td>
</tr>
<tr>
<td>25-29.9</td>
<td>13322</td>
<td>27.5</td>
<td>101</td>
<td>12.4</td>
<td>17.1</td>
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<tr>
<td>30-34.9</td>
<td>6381</td>
<td>13.2</td>
<td>54</td>
<td>8.5</td>
<td>8.5</td>
</tr>
<tr>
<td>35+</td>
<td>3775</td>
<td>7.8</td>
<td>37</td>
<td>6.2</td>
<td>22.0</td>
</tr>
</tbody>
</table>

CONCLUSION
- The elevated stillbirth risk in pregnancies of obese mothers is associated with an increase in SGA rate.
- This link is hidden when population based centiles are used, but becomes apparent when birthweight is measured against the customised growth potential, thus helping to identify the presence of IUGR.

SUMMARY POINTS
- Obesity is associated with an increased risk of stillbirth.
- Obesity is inversely related to SGA if a population standard is used, wrongly suggesting that it is protective of SGA.
- Obesity is directly related to SGA if a customised standard is used.
- SGA defined by the customised standard better reflects stillbirth risk than SGA by population standard.