Twin pregnancies and incidence of spontaneous preterm delivery stratified by chorionicity

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Abstract

Objective: To identify the incidence of spontaneous preterm birth (SPTB) and indications for delivery in women with twin pregnancy stratified by chorionicity (monochorionic diamniotic and dichorionic diamniotic pregnancies).

Study Design: Multicenter retrospective cohort of all consecutive twin gestations from 2010 to 2017. They were stratified by chorionicity: monochorionic diamniotic and dichorionic diamniotic pregnancies. Primary outcome was SPTB < 37 weeks. Secondary outcome was SPTB at < 34, < 32, and < 28 weeks, gestational age at delivery and indications for delivery: maternal and fetal. Analysis: t-test, Fisher’s exact test and multivariable logistic regression.

Results: 510 women with twin pregnancies were identified. 158 (30.9%) were monochorionic diamniotic, and 352 (69.0%) were dichorionic diamniotic pregnancies. The gestational age at delivery was significantly earlier in the monochorionic compared to the dichorionic group of about 2 weeks (MD 95% CI: 2.0 to 1.44). Twins with a monochorionic pregnancy had a significantly higher risk of SPTB < 37, < 34, < 32 weeks. They also had higher incidence of fetal indication for delivery and increased spontaneous onset of labor at any gestational age. Maternal complications were similar across both types of twin pregnancies. Gestational age at delivery was significantly earlier in MC/DA than DC/DA pregnancy. Women with twin pregnancies had: 70 (20.5%) were MC/DA pregnancies, and 89 (26.7%) were DC/DA pregnancies. They were stratified by chorionicity (Table 1).

Background

• Preterm birth rates for twins in United States in 2015 for <37, <34 and <32 weeks were 59%, 17% and 9%, respectively.
• Multiple gestations are at increased risk for both SPTB and indicated PTB due to maternal and fetal reasons.
• Monochorionic diamniotic (MC/DA) twins have higher incidence of preterm birth, mostly due to fetal indications.
• Spontaneous preterm birth (SPTB) by chorionicity has not been clearly determined.

Objective

To identify the incidence of spontaneous preterm birth (SPTB) and indications for delivery in women with twin pregnancy stratified by chorionicity.

Study Design

• Multicenter retrospective cohort
• Inclusion criteria: All diamniotic twin gestations delivered from 1/2010 to 6/2016
• Exclusion criteria: fetal reduction before 14 weeks, monoamniotic pregnancies
• Primary outcome was SPTB < 37 weeks stratified by chorionicity MC/DA and DC/DA pregnancy
• Secondary outcome was SPTB at <34, <32, and <28 weeks stratified by chorionicity MC/DA and DC/DA pregnancy

Results

Table 1. Maternal characteristics stratified by chorionicity

| MC/DA | N = 158 (30.9%) | DC/DA | N = 352 (69.0%) | P value
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<tbody>
<tr>
<td>Maternal age (years)</td>
<td>31.2 (4.5)</td>
<td>32.4 (4.7)</td>
<td>0.45</td>
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<tr>
<td>&gt;35 years</td>
<td>41 (25.9%)</td>
<td>100 (28.4%)</td>
<td>0.32</td>
<td></td>
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<tr>
<td>BMI</td>
<td>26.7 (6.2)</td>
<td>26.4 (6.3)</td>
<td>0.57</td>
<td></td>
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<tr>
<td>Nulliparity</td>
<td>100 (63.3%)</td>
<td>228 (64.8%)</td>
<td>0.57</td>
<td></td>
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<tr>
<td>Prior SPTB</td>
<td>11 (7.0%)</td>
<td>26 (7.4%)</td>
<td>0.81</td>
<td></td>
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<tr>
<td>Smoking</td>
<td>30 (12.7%)</td>
<td>50 (14.2%)</td>
<td>0.14</td>
<td></td>
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</tbody>
</table>

Results

Table 2. Pregnancy outcomes stratified by chorionicity

| MC/DA | N = 158 (30.9%) | DC/DA | N = 352 (69.0%) | aOR (95% CI) or MD (95% CI)*
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<tbody>
<tr>
<td>GA at delivery (weeks)</td>
<td>34.1 (2.9)</td>
<td>36.3 (3.1)</td>
<td>0.002</td>
<td>2.03 (1.26 to 8.64)</td>
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<tr>
<td>PTB &lt; 37 weeks</td>
<td>89 (56.3%)</td>
<td>176 (50.0%)</td>
<td>1.22</td>
<td>1.05 (1.01 to 1.97)</td>
</tr>
<tr>
<td>PTB &lt; 34 weeks</td>
<td>36 (23.4%)</td>
<td>80 (22.7%)</td>
<td>0.96</td>
<td>0.86 (0.60 to 1.22)</td>
</tr>
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<td>PTB &lt; 32 weeks</td>
<td>15 (10.9%)</td>
<td>35 (9.9%)</td>
<td>0.78</td>
<td>1.09 (0.81 to 1.45)</td>
</tr>
<tr>
<td>PTB &lt; 28 weeks</td>
<td>10 (6.5%)</td>
<td>14 (4.0%)</td>
<td>0.59</td>
<td>0.93 (0.59 to 1.41)</td>
</tr>
<tr>
<td>SPTB &lt; 37 weeks</td>
<td>83 (52.5%)</td>
<td>160 (45.5%)</td>
<td>1.07</td>
<td>1.04 (1.01 to 1.07)</td>
</tr>
<tr>
<td>SPTB &lt; 34 weeks</td>
<td>50 (39.7%)</td>
<td>70 (20.5%)</td>
<td>1.07</td>
<td>1.07 (1.03 to 1.11)</td>
</tr>
<tr>
<td>SPTB &lt; 32 weeks</td>
<td>18 (11.4%)</td>
<td>28 (8.0%)</td>
<td>0.01</td>
<td>1.41 (0.74 to 2.70)</td>
</tr>
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<td>SPTB &lt; 28 weeks</td>
<td>8 (5.1%)</td>
<td>11 (3.1%)</td>
<td>0.49</td>
<td>1.61 (1.26 to 2.05)</td>
</tr>
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Conclusions

Monochorionic diamniotic pregnancies had:
• Higher incidence of spontaneous onset of labor
• Higher rates of SPTB at any gestational age
• Higher incidence of fetal indications for preterm delivery compared with dichorionic pregnancies.

This information will assist in counseling patients with twin pregnancy regarding their individual SPTB risk.

References