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Original Article

Labor and birth outcomes in term low-risk adolescent pregnancies

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Abstract

Aim: The study aimed to evaluate the relationship between the caries frequency, which was determined using different caries indexes Objective: The aim of this study was to investigate the effect of in-office bleaching agents on the color and translucency of different resin composites.

Materials and Methods: Twenty-four disk-shaped specimens with 1 mm thickness and 8 mm diameter were fabricated from five different resin composites. The specimens were then divided into three subgroups, two office bleaching groups (40% Opalescence Boost, 38% Whitesmile Power Whitening) and one control group (n=8). All specimens were polymerized for 40 s with a LED light-curing unit. Color measurement was performed using a spectrophotometer. Bleaching agents were applied to the experimental groups in accordance with the manufacturer's instructions for 14 days, while the specimens in the control group were kept in distilled water only. Translucency parameters of the specimens before and after bleaching and the color changes after bleaching were calculated using CIE $L^*a^*b^*$ color coordinates. Data were analyzed using the paired sample t-test and ANOVA (α=0.05).

Results: Statistically significant differences were found between the control group and the bleached groups according to color change values ($p<0.05$). The highest mean color change value was observed in the Ceram-X / Opalescence Boost group. The Ceram-X / Opalescence Boost, Majesty Esthetic / Opalescence Boost, and Ceram-X / Whitesmile Power specimens showed clinically non-acceptable color changes. Translucency parameter values in each group between baseline and the end of the 14th day revealed no statistically significant difference ($p>0.05$).

Conclusions: The office bleaching agents may affect the color and translucency parameters of composite resins depending on the structural properties.

Keywords: Adolescent pregnancies; birth; labor; obstetric complications

INTRODUCTION

Adolescent pregnancies are a global problem with both psychosocial and medical aspects. In developing countries, an estimated 16 million of 21 million pregnant girls between 15-19 years give birth every year and this number is reported as 2.5 million births below 16-year-old mothers (1-3). The adolescent birth rates have declined in reports in the past decades; however, the issue became more problematic due to the increased number of pregnancies because of the increase in the adolescent population (1).

The adolescent pregnancies were related to low educational status, childhood marriages, poverty, unexpected pregnancies, and unemployment in reports (3). Depression, anxiety and postpartum depression scores were found to be increased in adolescent pregnant women (4). Apart from the social aspects, maternal and neonatal complications are also increased in adolescents due to several reasons such as the immaturity of the pelvis and nutritional insufficiency (1, 5). The increased fetal adverse outcomes are reported in the adolescent group with the decreased maternal age (6). Prematurity, intrauterine growth restriction, preeclampsia, abortion, fetal loss, and placental abruption are seen more commonly in adolescent pregnancies (7-10).

When it comes to labor and delivery, the maternal and neonatal outcomes are jeopardized again. The higher rates of nulliparity in adolescent pregnancies lead to more episiotomies, operative deliveries and more perineal

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lacerations (11,12). In current study, we aimed to compare the labor and birth outcomes of term singleton adolescent pregnant women with the normal aged pregnancies.

MATERIALS and METHODS

This retrospective case-control study was conducted between May-August 2017 in Zekai Tahir Burak Women's Health Education and Research Hospital, which is an obstetric tertiary care center in Ankara, Turkey. The study was approved by the institutional review board with the number: 03/04/2017-#8. Low-risk, singleton pregnant women who were admitted for delivery between the 36-42 weeks of gestation were included in the study. Records of the pregnant women <20 years and the consecutive patient who is ≥20 years who gave birth in the labor and delivery unit were collected. The indications for hospitalization of the recruited patients were as follows; active labor with regular pains, rupture of membranes, oligohydramnios, decrease in fetal movements. The women who were hospitalized with the listed indications and delivered either spontaneously or by induction were included. Multiple pregnancies, chronic diseases, drug use (anti-hypertensive drugs, low molecular weight heparin, oral anti-diabetics, insulin, thyroid drugs); women with pre-eclampsia, fetal anomaly, intrauterine growth retardation, preterm delivery, preterm premature rupture of membranes, cholestasis of pregnancy were excluded. Small for gestational age was accepted as fetal birth weight <10th percentile. The demographic data, progress of labor, need of induction, cesarean section (CS) rates, obstetric complications and neonatal outcomes were analyzed.

Statistical analysis

Statistical analysis was performed out by SPSS (Statistical Package for the Social Sciences) for Windows 23 (SPSS Inc., Chicago, IL). The distribution of parameters was analyzed by the Kolmogorov-Smirnov test and the Shapiro-Wilks test. For the variables with normal distribution, Independent sample's T-Test; for the variables without normal distribution. Pearson's Chi-Square Test was performed for the analysis of categorical variables. P values <0.05 were considered significant.

RESULTS

A total of 299 women were recruited. The data of one hundred and fifty pregnant women <20 years and 149 women ≥20 years were analyzed. The main findings can be seen in Table 1. The mean age was 17.8 (±1.0) in the adolescent group (<20 years) and 27.7 (±5.3) in the control group. Groups were similar in terms of prepregnancy and prepartum BMI (body mass index), gestational weight gain and antepartum hemoglobin levels. The small for gestational age (SGA) rates did not increase with the adolescence. The duration of marriage (p<0.01) and the educational status (p=0.03) were significantly lower in pregnant adolescents.

Overall CS and primary CS rates were similar between groups however, the adult group had higher repeat CS rates when compared with adolescents (11.4% vs. 3.3% respectively, p=0.02). Primary cesarean section rates were similar between the adolescent and the control groups.

Table 1. Comparison of pregnant women <20 years and ≥ 20 years

	<20 years (n=150)	>20 years (n=149)	P
Gestational week	38.4 (±1.6)	39.3 (±1.3)	**<0.01**[b]
Weight (kg)	71.6 (±10.9)	76.5 (±11.4)	**<0.01**[b]
Height (cm)	159 (±6.6)	161 (±5.6)	0.48[b]
BMI at birth (kg/m^2)	28.1 (± 3.7)	29.4 (±4.3)	**0.05**[b]
Pre-pregnancy weight (kg)	62.7 (± 14.7)	65.5 (± 16.8)	0.21[b]
Pre-pregnancy BMI (kg/m^2)	24.4 (± 4.7)	25.5 (± 5.1)	0.11[b]
Weight gain in pregnancy (kg)	13.19 (±4.9)	14.3 (±5.8)	0.11[b]
Education [*](n)	38 (25.3%)	55 (36.9%)	**0.03**[a]
Duration of marriage (years)	1.3 (±0.8)	5.4 (± 5)	**<0.01**[b]
Nulliparity (n)	129 (86%)	57 (38%)	**<0.01**[a]
Cesarean sections (CS); (n)	20 (13.3%)	29 (19.5%)	0.15
Primary CS	15 (10%)	12 (8.1%)	0.56
Repeat CS	5 (3.3%)	17 (11.4%)	**0.02**
Episiotomy among vaginal birth (n)	110/126 (87.3%)	58/115 (50.4%)	**<0.01**[a]
APGAR 1	7.6 (±0.5)	7.6 (±0.5)	0.83[b]
APGAR 5	9.6 (± 0.4)	9.6 (± 0.5)	0.50[b]
Fetal weight (g)	3131 (±429)	3243 (±425)	**0.02**[b]
Small for gestational age fetus (n)	15 (10%)	16 (10.7%)	0.83
Administration NICU (n)	14 (9.3 %)	13 (8.7 %)	0.85[a]
Complications [†] (n)	15 (10%)	1 (0.7%)	**<0.01**[a]
Hemoglobin levels upon administration (g/dl)	11.8 (±1.5)	11.9 (± 1.3)	0.64 b

BMI: Body mass index, NICU: neonatal intensive care unit, CS: cesarean section
[*] Graduation from high school or university
[†] Maternal complications: uterine atony, cervical laceration, vaginal laceration
[a] Pearson's Chi-square test
[b] Independent samples t-test

APGAR scores and admission to neonatal intensive care unit (NICU) were similar between groups. Adolescents gave birth in earlier weeks (p<0.01) and their infants' weight was significantly lower (p=0.02); however small for gestational age rates were similar (0.83).

Episiotomy rates were higher in adolescents (p<0.01). Among 15 complications reported in adolescents; there were 2 uterine atonies, 10 severe vaginal lacerations, 1 cervical laceration, one 3° laceration, and one 4° laceration; while only one 4° laceration was reported in the control group. There were no maternal and fetal losses.

DISCUSSION

Adolescent pregnancies will continue to be a major problem for communities, therefore, it should be analyzed in many aspects to prevent social and medical problems coming with young age mothers. In this study, we analyzed a specific group of adolescents, who had low-risk, term, singleton pregnancies and gave birth in our clinic and we have compared them with low-risk adult term pregnant women.

According to our findings, despite the primary cesarean section rates were similar between adolescents and adults, the complication rates were significantly higher in adolescent mothers. The episiotomy rates were significantly higher in adolescents, most probably because of nulliparity. Furthermore, the increased episiotomy rates did not prevent severe perineal lacerations. Adolescents had higher severe perineal laceration rates which may be caused by the immaturity of the perineal tissues and the pelvis. In a study which evaluated the risk factors of severe perineal and cervical lacerations, it was reported that nulliparity had a 7.2 fold increased risk for severe lacerations (11). A study, which compared 268 singleton adolescent pregnancies with 832 normal aged controls reported increased risk of low birth weight infants, prematurity, early neonatal death, preeclampsia/eclampsia syndrome, perineal tears and episiotomies while no increased risk was found for stillbirth, intrauterine growth restriction, cesarean delivery, instrumental delivery and premature rupture of membranes were not significantly increased (13). The aforementioned study diverged with its study design including all births >28th week of gestation. Due to the different study design and only inclusion of the labor and delivery outcomes of the low-risk pregnancies >36 weeks, our study results did not include women with preterm actions and hypertensive cases; but concurrent with their results, increased risk for perineal tears was detected while our primary cesarean rates were also similar between groups.

In previous studies, nutritional status was also reported as a concern in adolescent expecting mothers (14). In our study group, pre-pregnancy BMI, gestational weight gain and antepartum hemoglobin levels did not differ between groups and they were sufficient. In addition, the rate of SGA infants were also similar in adolescent and adult pregnancies. Only the BMI at birth was significantly lower in adolescent pregnant women. The mean fetal weight was lower in adolescent mothers as well as the earlier mean birth week in the same group. Therefore, considering the not increased SGA rates, the lower fetal weight could be connected to the earlier birth weeks in the adolescent group. A retrospective cohort study, also from Turkey by Cift et al. reported the pre-pregnancy BMI and gestational weight gain was significantly lower in adolescents when compared with adults (15). This study differed from our report with the study design and inclusion of all adolescent pregnant women. The different results may be caused by the inclusion of only the term low-risk pregnancies in our study. Therefore, with our current data, it is not possible to make a judgment that adolescents did not have a nutritional deficiency. Rather, we may say that in low-risk term pregnant adolescents, nutritional status was not worse than term low-risk adults.

Stewart et al. reported a study which analyzed the outcomes of young aged primiparous pregnancies in a rural area of Nepal with a nutritionally poor environment (16). The study analyzed a total of 1393 pregnancies and concurrent with our results, they reported the risk of SGA or low birth weight infant risks did not increase with the young maternal age. A systematic review and meta-analysis also reported that the analysis of the SGA risk (<10th percentile) was not possible because of the variations of the definitions, however, there was not a significantly increased risk for low birth-weight infants in adolescent mothers (17). To sum up, large and detailed prospective cohort studies are needed to define if there is a nutritional deficiency in adolescent pregnant women, which would lead to increased risk for obstetric complications.

The mean 1st and 5th minute APGAR levels were similar between adolescent and adult mothers in our study. Conversely, the systematic review and meta-analysis of 20 articles reported, the risk of APGAR scores below 7 in both 1st and 5th minutes were significantly higher in adolescent mothers (17).

The rate of women, who graduated from high-school and university was lower in the adolescent group and the mean duration of marriage was also shorter as expected. These two issues are important social problems. The low level of schooling also have brought the factors such absence of a permanent partner and lack of contraceptive use because of the inadequate knowledge and being unable to access a contraceptive method (18,19). Discontinuing education, drug abuse, absence of future plans, unemployment, low-income status, and poverty are concerns for adolescent mothers and their newborn children (1,20).

The limitation of our study was the missing data of the second stage of labor, because of the retrospective nature of the study. We also did not include the high-risk pregnancy group who had concomitant chronic diseases and major obstetric syndromes such as preterm delivery and preeclampsia. Even this analysis in a limited time of 4 months, in a tertiary obstetric care center, which restricted the study group to only low-risk term pregnant adolescents revealed that a high number of adolescent births occur with increased rates of maternal obstetric complications. Cohort studies are urgently needed for the whole adolescent pregnant population, which categorizes

the sociodemographic, socio-cultural, economic and medical characteristics of these women to develop prevention and treatment strategies and improve the obstetric care to reduce the complication rates.

CONCLUSION

In conclusion, although the fetal results were similar, complications for mothers were significantly higher in low-risk, term adolescents. Intensive policies on education, health-care and family planning are needed to prevent a major social problem; adolescent pregnancies.

Conflict of interest: The authors declare that they have no competing interest.

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