



# The effect of uterine fibroids on pregnancy outcomes

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## Abstract

**Objective:** The objective of this study was to determine the effect of uterine fibroids on pregnancy outcomes.

**Methods:** This was a retrospective, matched cohort study of 157 pregnancies with uterine fibroids and a similar number without uterine fibroids identified through our departmental ultrasound database. We then collected data on patient characteristics, fibroid measurements, and pregnancy outcomes from the ultrasound database, office charts, and hospital records. Data was analyzed using univariate and multivariate analysis.

**Results:** Both groups were similar with respect to age, race, and parity. Most pregnancies with and without uterine fibroids delivered at term (median 39 weeks), with similar birth weights. Pregnancies with fibroids had a higher overall cesarean section rate (50% versus 31%,  $p = 0.004$ ), greater blood loss (median 450 cc versus 350 cc,  $p = 0.015$ ), greater hemoglobin decrease during delivery (median 1.5 g/dl versus 1.1 g/dl,  $p = 0.009$ ), greater maternal length of stay (median 3 days versus 2 days,  $p < 0.001$ ), and greater neonatal length of stay (median 3 days versus 2 days,  $p < 0.001$ ). Pregnancies with fibroids also had a higher unplanned cesarean section rate, increased risk of neonatal NICU admissions, need for blood transfusion, and malpresentation, although not at a level of statistical significance.

**Conclusion:** Pregnancies with uterine fibroids did well overall, with most delivering at term. These pregnancies did have increased rates of cesarean delivery, greater blood loss, and longer neonatal and maternal length of stay.

## Background

- Uterine fibroids are present in approximately 20-50% of women of reproductive age.
- Uterine fibroids may increase the risk of dysfunctional labor, prolonged labor, breech presentation, and cesarean delivery.
- Many women undergo invasive procedures to treat fibroids in effort to prevent future pregnancy complications despite limited literature regarding pregnancy outcomes.

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- 2 Coronado G, Marshall L, Schwartz S. Complications in Pregnancy, Labor and Delivery with Uterine Leiomyomas: A Population-Based Study. *Obstet Gynecol* 2000;95:764-9.
- 3 Goldberg J, Pereira L, Diamond J, Berghella V, Daraï E, Seinera P, Seracchioli R. Pregnancy outcomes following treatment for fibroids: uterine artery embolization versus laparoscopic myomectomy. *Am J Obstet Gynecol* 2004;191:18-21.

## Materials & Methods

- Approval was obtained from Thomas Jefferson University Institutional Review Board (IRB).
- The Jefferson Department of OB/GYN obstetrical ultrasound database was queried for pregnancies complicated by uterine fibroids between 1999 and 2004.
- Demographic, clinical, and outcomes data were extracted from the ultrasound database, office charts, hospital charts, and the Last Word computerized patient database.
- Pregnancies delivered < 20 weeks gestational age were excluded.
- In patients with > 1 pregnancy identified in the database, only the index pregnancy was included in analysis.
- Data was entered into a Microsoft Access database.
- Similar controls without fibroids were identified in the obstetrical ultrasound database using age, race, and parity.
- Adverse events included blood transfusion, NICU admission, preterm labor, oligohydramnios, small for gestational age, chorioamnionitis, abruption, and unplanned cesarean section.
- The differences between pregnancies with and without fibroids were tested in multivariate models controlling for age, race, and parity of patients. We used logistic regression models for categorical pregnancy outcomes, ANOVA on ranks of observations (nonparametric model) for continuous pregnancy outcomes, and Poisson regression to model the total number of adverse events associated with delivery.

## Results

- We identified 157 pregnancies with uterine fibroids and a similar number of control pregnancies without fibroids.
- Pregnancies with and without fibroids were statistically similar with respect to age, race, and parity.
- In both groups, the median gestational age at delivery was  $\geq 39$  weeks, with similar birth weights (Table 1).
- Pregnancies with fibroids had more preterm labor, higher overall cesarean section rate, greater blood loss, a greater decrease in their hemoglobin value, longer maternal and neonatal length of stays, and more adverse events (Table 1).
- Pregnancies with fibroids also had an increased risk of unplanned cesarean section, neonatal NICU admissions, higher rate of blood transfusion, and malpresentation, although our power was not sufficient to demonstrate statistical significance.
- Increasing total fibroid volume ( $\text{cm}^3$ ) did not statistically increase the rate of adverse events ( $p = 0.48$ ), blood loss  $> 1000$  mL ( $p = 0.38$ ), and needing a transfusion ( $p = 0.075$ ).

Table 1. Outcomes of pregnancies with and without fibroids.

	Fibroids (N=157)	No Fibroids (N=183)	P-value
Gestational age at delivery (weeks):			
Median:	39.0	39.3	0.046
Range:	20.9 - 42	20.7 - 42	
$\geq 37$ weeks (n/N (%))	132/157 (84%)	160/183 (87%)	
<37 weeks	25/157 (16%)	23/183 (13%)	0.440
<34 weeks	9/157 (6%)	4/183 (2%)	0.098
<28 weeks	4/157 (3%)	1/183 (0%)	0.190
Birth weight (grams) (median):	3260	3293	0.390
Range:	325 - 5504	330 - 4810	
Overall C-section rate (n/N):	78/157 (50%)	57/183 (31%)	0.004
Unplanned C-section rate (n/N):	43/122 (35%)	36/162 (22%)	0.056
Need for blood transfusion (n/N):	6/157 (4%)	1/183 (0.6%)	0.120
Preterm labor (n/N):	15/157 (10%)	6/183 (3%)	0.018
Any adverse event (n/N):	67/157 (43%)	48/184 (26%)	0.006
Number of adverse events per patient (mean):	0.65	0.34	<0.001
Range:	0 - 4	0 - 3	
Delivery blood loss (ml) (median):	450	350	0.015
Range:	100 - 9500	100 - 5500	
Delivery hemoglobin decrease (median):	1.5	1.1	0.009
Range:	-0.8 - 7.7	-4.8 - 5.9	
Neonatal hospital days (median):	3	2	<0.001
Range	1 - 107	2 - 79	
Maternal hospital days (median):	3	2	<0.001
Range	1 - 12	2 - 5	

## Conclusion

- Pregnancies with uterine fibroids did well overall, with most delivering at term.
- These pregnancies did have increased rates of cesarean delivery, preterm labor, greater blood loss, and longer neonatal and maternal length of stay.
- We found no evidence that increasing fibroid volume is associated with higher rates of pregnancy complications.

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