

Extra O₂ May Not Decrease Postcesarean Infections

BY DIANA MAHONEY
New England Bureau

BOSTON — The administration of supplemental perioperative oxygen did not decrease the risk of endometritis or wound infection associated with cesarean delivery in a randomized, double-blind study, Dr. Carolyn Gardella reported at the annual meeting of the Infectious Diseases Society for Obstetrics and Gynecology.

Based on colorectal surgery literature in-

dicating that the administration of perioperative oxygen significantly decreases surgical infection rates, Dr. Gardella and colleagues at the University of Washington, Seattle, hypothesized that the same strategy might similarly decrease the incidence of surgical infections in women undergoing cesarean delivery.

To test the hypothesis, the investigators randomly assigned 143 women who were undergoing cesarean delivery under regional anesthesia after the onset of labor

or rupture of membranes to receive 30% or 80% inspired oxygen via nonrebreather masks during surgery and for 2 hours after surgery between October 2002 and April 2007.

The 74 women assigned to the 30% oxygen group and 69 assigned to the 80% oxygen group represented approximately one-quarter of the planned data accrual, said Dr. Gardella.

“Our institutional postpartum endometritis rate was 15%. Assuming this as

a baseline, and with an 80% study power, we determined we would need 225 women per study arm to detect a 50% decrease in the infection rate, and we planned to do an interim analysis at 25%,” she said.

The study population excluded women who were undergoing elective cesarean section prior to onset of labor or rupture of membranes “because the risk of infection in this population is so low,” Dr. Gardella noted.

“We also excluded women with truly emergent cesarean sections because we couldn’t implement [the oxygen protocol] during an emergency, and [we excluded] those with clinical chorioamnionitis because it was too difficult for us to tell whether or not their infection was true postpartum wound infection or just a continuation of the chorioamnionitis.” Although women undergoing planned general endotracheal anesthesia were also excluded, those who were converted from regional to general were not, she said.

Blinded oxygen delivery during the study was a challenge, Dr. Gardella said. “In the colorectal surgery data, patients were under general anesthesia, so it was easy to dial up their oxygen. We were dealing with women undergoing regional anesthesia, so we developed a system where we could maintain blinding by giving all of the women 15 liters flow, but then used an oxygen blender under cover to blend 100% oxygen with air in order to establish two separate groups,” she said, noting that only the anesthesiologists were aware of patients’ study assignments during and following the operation.

Dorsum venous oxygen was used as a proxy for arterial oxygen. In pretrial testing on volunteers, “we were able to achieve different oxygen levels using this method,” she said.

Postoperative infection was defined clinically as administration of antibiotics for postpartum endometritis or wound infection during the initial hospital stay or within 14 days of surgery. Secondary outcomes were length of hospital stay, whether the wound separated, and whether there was readmission for infection.

Antepartum and intrapartum characteristics were similar in both study groups. “We had a variable increase in the number of women with complications such as hypertension or preeclampsia assigned to the 30% [versus] the 80% group, and diabetes was slightly more likely in the 80% group, though the increases were not statistically significant,” said Dr. Gardella. Gestational age at delivery was approximately 38 weeks in both groups. The duration of labor was slightly longer in the 30% group, and those women were also slightly more likely to have intact membranes, she said.

The incidence of group B streptococcus was approximately 25% in the study population, “which is consistent with the prevalence in our labor and delivery population as a whole,” said Dr. Gardella. “The use of antibiotics in labor, primarily

Continued on following page

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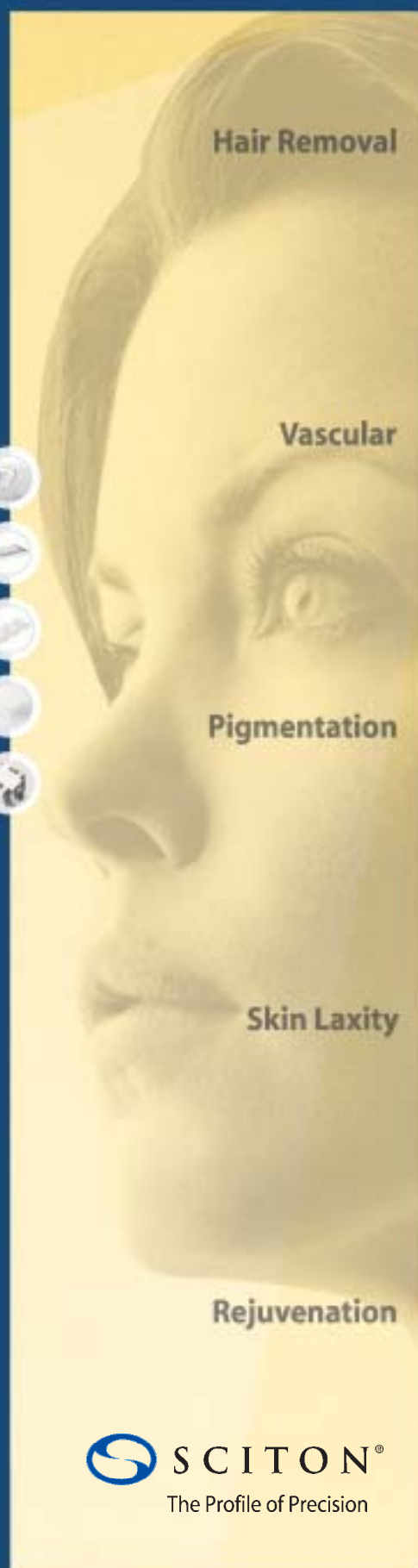
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Don't Choose Cesarean to Lower Incontinence Risk

BY SHERRY BOSCHERT
San Francisco Bureau

SAN FRANCISCO — Several studies have shown that women who develop urinary incontinence during pregnancy are more likely to have postpartum and long-term incontinence. A separate randomized, controlled study suggests that cesarean delivery may protect against development of postpartum urinary incontinence.

Does that mean that women with incontinence during pregnancy should be delivered by C-section to keep the incontinence from getting worse?

No, said Dr. Sharon K. Knight at a meeting on antepartum and intrapartum management sponsored by the University of California, San Francisco. In general, 3 months after delivery the prevalence of postpartum incontinence is 9%-31%, and the incidence is 7%-15%, data suggest.

Studies show that about half of women develop transient urinary incontinence during pregnancy, which increases the risk

for postpartum incontinence. The same studies report that the mode of delivery did not affect the risk of incontinence, said Dr. Knight of the university.

The one randomized study that suggested cesarean delivery might decrease the risk of postpartum incontinence had methodological problems and found a short-term benefit only in women who had no previous incontinence, she added.

That study randomized women to a trial of labor or cesarean delivery for breech

babies, and the incontinence rate was a secondary outcome measure. Three months after delivery, the vaginal delivery group had nearly twice the rate of incontinence as the C-section group, but that difference had disappeared by the 2-year follow-up (*Am. J. Obstet. Gynecol.* 2004;191:917-27). Many of these women went on to have more babies after the study, which complicates the 2-year results because it's unknown whether they were delivered vaginally or by cesarean section, Dr. Knight noted.

Retrospective studies of women who delivered exclusively by one mode or the other have produced conflicting results on incontinence rates, but the largest population-based studies found no difference based on mode of delivery, she said.

Epidemiologic studies report that primiparous women have twice the rate of stress incontinence as nulliparous women.

By ages 50-65 years, "just being a woman puts you at high risk of having urinary incontinence," Dr. Knight said. ■

Continued from previous page

for group B strep prophylaxis, was between 34% and 40%."

Deviations in study protocol were observed in eight patients from each group, Dr. Gardella reported. "In the 30% group, two patients were converted to endotracheal anesthesia, three patients required an increase in inspired oxygen because of neonatal distress observed in the operating room, and three patients had intermittent mask use either during the surgical procedure because of vomiting, nausea, or claustrophobia, or after surgery because they wanted to feel closer to their baby without the mask," she said. In the 80% group, three were converted to general endotracheal anesthesia and five had intermittent mask use.

An analysis of patient outcomes showed that 25% of the women receiving 80% oxygen, compared with 14% of those receiving 30% oxygen, developed postpartum cellulitis or endometritis, or received intravenous antibiotics for either of those conditions, Dr. Gardella reported.

"Hospital readmission and wound separation were also more common in the 80% group," she said. "None of the numbers reached statistical significance because the study was not powered for that, but the data [were trending] in the wrong direction." Because the P value exceeded the P value for futility, suggesting the observed differences were unlikely to reach statistical significance with continued recruitment, the trial was stopped.

The study was limited by a number of considerations. The median duration of oxygen therapy was less than planned, there was significant overlap in the median level of venous oxygen in the 80% group and the 30% group, and it's possible a therapeutic level was not achieved, and the dorsum of the foot was used as a proxy measure of oxygen delivery. Finally, the outcome may have been 'muddled by antibiotic overuse in the study population, Dr. Gardella said. ■

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