

Correspondence

Antibiotic prophylaxis for cesarean delivery: Before skin incision or after umbilical cord clamping?

To the Editor,

In the review items of new hospital accreditation, Chapter 3 under correct usage of prophylactic antibiotics, I have found out that there is an item of antibiotic administration for cesarean delivery until after umbilical cord clamping and the advice is to keep the old traditional prophylactic antibiotic treatment. I believe that the policy to continue doing so is not right, and asking obstetricians to continue practice is even fault. There was a lot of literature in favoring antibiotic prophylaxis for cesarean delivery that was given before skin incision, rather than after cord clamping. Why specialists in infectious disease and surgeons also insist, and no more requested by pediatricians that obstetricians should give antibiotic treatment in women undergoing cesarean delivery after cord clamping? In the section of introduction of guidelines for the use of prophylactic antibiotics in surgery in Taiwan published in 2004 stated “The major exception is cesarean section, in which the first dose of prophylaxis should be delayed until the umbilical cord is clamped to avoid placental transfer of the antibiotic to the fetus” [1]. In the search of recent articles, all data demonstrate that preincision prophylaxis rather than after cord clamping is advantageous for the mother and not harmful to the neonate.

The single well-known most important risk factor for postpartum maternal infection is cesarean delivery. A total of 66 trials were included for review to assess the effects of prophylactic antibiotic treatment on infectious complications in women undergoing cesarean delivery from the Cochrane Pregnancy and Childbirth Group trials register and the Cochrane Controlled Trials Register. The conclusion was the reduction of endometritis by two thirds to three quarters justifies a policy of administering prophylactic antibiotics to women undergoing elective or nonelective cesarean section in a Cochrane review in 2000 [2]. In a 2010 update version, 81 trials were included with the same conclusion [3]. In another Cochrane review in 2000 to determine which antibiotic regimen is most effective in reducing the incidence of infectious morbidity in women undergoing cesarean section, 51 trials published between 1979 and 1994 were included in the review and 4 were excluded from the review. The conclusion was both ampicillin and first-generation cephalosporins had similar efficacy in reducing postoperative endometritis. There did not appear to be added benefit in using a broader spectrum

agent or a multiple dose regimen. The authors concluded, “There is a need for an appropriately designed randomized trial to test the optimal timing of administration (immediately after the cord is clamped versus pre-operative)” [4]. Apparently, there was not enough information at that time.

To summarize the available evidence on timing of peri-operative antibiotics for cesarean delivery, a meta-analysis was performed in 2008 to compare prophylactic antibiotics for cesarean delivery that were given before the procedure versus at cord clamping. There was strong evidence that antibiotic prophylaxis for cesarean delivery that was given before skin incision, rather than after cord clamping, decreased the incidence of postpartum endometritis and total infectious morbidities, without affecting neonatal outcomes [5]. A systematic review with a full PubMed (January 1966 to July 2008) search using the key words “cesarean” and “antibiotic prophylaxis” was done in 2009. In 15 studies selected from a total of 277 articles and nine reports involving national recommendations or technical reviews, the same conclusion was reached. The use of either cefazolin alone before surgical incision or an extended-spectrum regimen after cord clamp seemed to be associated with a reduction in postcesarean maternal infection. “Confirmatory studies focusing additionally on neonatal outcomes and the effect on resistant organisms, as well as studies comparing both strategies, are needed.” [6].

Dr. Walsh [7] challenged all technical aspects in cesarean section and commented on evidence-based cesarean technique that widely accepted aspects, including antibiotics administration at cord clamping and creation of a bladder flap, may not be the best practice. Delaying antibiotic administration until after cord clamping in an attempt to avoid interference with neonatal cultures had been a common practice but is not necessary and is no longer requested by pediatricians. In correspondence to Massachusetts General Hospital Case 33-2009, Drs. Clay and Camann [8] agreed and suggested antimicrobial prophylaxis before skin incision, under same guidelines as surgical antibiotic coverage. Therefore, preincision antibiotic prophylaxis is the established standard for all other surgical procedures and should be the practice for cesarean deliveries, as well. It is suggested and recommended that the item of review the antibiotic administration until after cord clamping should be abandoned and removed from hospital accreditation also.

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Accepted 30 June 2010

References

- [1] Infectious Diseases Society of the Republic of China; Taiwan Surgical Association. Guidelines for the use of prophylactic antibiotics in surgery in Taiwan. *J Microbiol Immunol Infect* 2004;37:71–4.
- [2] Smaill F, Hofmeyr GJ. Antibiotic prophylaxis for cesarean section. *Cochrane Database Syst Rev* 2000;(2): CD000933.
- [3] Hofmeyr GJ, Smaill FM. Antibiotic prophylaxis for cesarean section. *Cochrane Database Syst Rev* 2010;(1): CD000933.
- [4] Hopkins L, Smaill F. Antibiotic prophylaxis regimens and drugs for cesarean section. *Cochrane Database Syst Rev* 2000;(2): CD001136.
- [5] Costantine MM, Rahman M, Ghulmiyah L, Byers BD, Longo M, Wen T, et al. Timing of perioperative antibiotics for cesarean delivery: a meta-analysis. *Am J Obstet Gynecol* 2008;199:301. e1–6.
- [6] Tita AT, Rouse DJ, Blackwell S, Saade GR, Spong CY, Andrews WW. Emerging concepts in antibiotic prophylaxis for cesarean delivery: a systematic review. *Obstet Gynecol* 2009;113:675–82.
- [7] Walsh CA. Evidence-based cesarean technique. *Curr Opin Obstet Gynecol* 2010;22:110–5.
- [8] Clay R, Camann W. Case 33-2009: a woman with fever after cesarean section. *N Engl J Med* 2010;362:273–4.