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Risk of Abortion Following General Anesthesia for Surgery during Pregnancy: Anesthetic or Surgical Procedure?

To the Editor:—The recent survey by Duncan *et al.*¹ on the pregnancy outcome of all women in the province of Manitoba who underwent surgery during pregnancy between 1971 and 1978 is by far the best designed and executed study of this type to date. However, their conclusion that “general anesthesia is associated with a higher incidence of abortion” deserves closer scrutiny. Anesthesia was classified only as nil, general, spinal/block, or local, and surgical procedures were referred to only by site (abdominal, obstetric/gynecologic, or other). The relative frequency of these various techniques and the exact nature of the operations are not stated. The estimated risk ratio for abortion with these techniques, *i.e.*, the ratio of the number of discordant pairs (where one member had an abortion and the matched subject did not) with the anesthetic type in question *versus* that of the control group, were, respectively: nil, 0.61; general, 1.58; spinal, 1.0; and local, 0.62.

Do these data really indicate that general anesthesia increases the risk of abortion (and that perhaps, conversely, having a surgical procedure under local or no anesthesia tends to decrease such risk)? Because it is unlikely that anything except minor surgery was performed under local, or no, anesthesia, one might surmise that the general anesthesia group comprised the more complex surgical procedures. Although major abdominal cases such as ovarian cystectomy and appendectomy could have been performed under regional block, there was only one discordant pair for the spinal/block group and its control, suggesting that spinal and epidural block were rarely used. Indeed, the authors state that “there were too few obstetric or gynecologic procedures done under alternative techniques [to general] to relate the effect to surgical procedure alone.”

My interpretation of the data presented in this paper leads me to the same conclusion that has been reached in other studies, *i.e.*, that it is the magnitude or nature of the surgical procedure, rather than the anesthetic itself, that is most relevant with respect to the increased risk of abortion. The fact that the increased risk ratio for general anesthesia was most marked, *i.e.*, 2.0, with obstetric/gynecologic procedures tends to support this conclusion. Although few patients had operations for cervical incompetence, it is likely that any obstetric/gynecologic procedure that required general anesthesia (as compared to a minor procedure that could be done without anesthesia or under local), would be capable of disturbing the conceptus. Perhaps the authors could reanalyze their data with respect to whether patients had “major” or “minor” procedures. These categories could incorporate the risk factors known, or thought, to influence fetal well being or the onset of premature labor, *e.g.*, circulatory instability, anatomic proximity to the uterus, exposure to radiation or multiple drugs, and infection. In the meantime, I must agree with the authors that “it is conjectural at present which factor(s) account for the observed increase in fetal risk,” and support their advice that operations should be avoided during pregnancy whenever possible.

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REFERENCE

1. Duncan PG, Pope WDB, Cohen MM, Greer N: Fetal risk of anesthesia and surgery during pregnancy. *ANESTHESIOLOGY* 64: 790–794, 1986

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In reply:—Dr. Cohen has raised the central issue in the management of the pregnant surgical patient: Does it matter what type of anesthetic is used for a given operative procedure? To answer the question definitively a study would have to concentrate on identical procedures performed in an identical fashion for women in an identical state of health—an impossible task logistically given the low incidence of surgery during pregnancy. There is no

doubt that, as was demonstrated in the earlier referenced studies, the surgical procedure performed has a significant effect, particularly when there is direct manipulation of the reproductive organs. We confirmed this observation, demonstrating a risk ratio of 2.0 in obstetric/gynecologic procedures. However, we also found a significant risk in those individuals undergoing other operations, but only when performed with general anesthesia. While the pro-