others,[3] permits rates of intravenous infusion up to a maximum of 80 μg/min, all of the patients with severe cardiovascular complications whom we reported on were treated with infusion rates which were within the range considered to be "safe," even by Dr. Ingemarsson; namely, 10 to 30 μg/min (Table I in Reference 1). Similarly, in a report by Jacobs and associates,[4] who described four patients with pulmonary edema during terbutaline tocolysis, the infusion rates used were within the above-suggested range. It seems, therefore, that not the rate of administration of terbutaline but, rather, the individual patient's response to the infusion plays an important causative role in the development of these complications. At present, we tend to believe that the development of severe side effects could be linked to prolonged tachycardia and excessive circulating plasma volume, both of which lead to a state of high cardiac output and, ultimately, to cardiac failure and pulmonary edema.

Since awareness of the potential risks of beta-mimetic tocolysis is expected to increase, we hope that improvement in the surveillance of patients undergoing treatment will follow, with a resulting decrease in the incidence of these adverse and potentially serious side effects.

Michael Katz, M.D.
Patricia A. Robertson, M.D.
Robert K. Creasy, M.D.

University of California Medical Center
Room 1489M
San Francisco, California 94143

REFERENCES

1. Katz, M., Robertson, P. A., and Creasy, R. K.: Cardiovascular complications associated with terbutaline treatment for preterm labor, AM. J. OBSTET. GYNECOL. **139**:605, 1981.
2. Speroff, L., Morton, M. J., Wagner, J. M., Johnson, K. A., and O'Grady, J. P.: The effect of terbutaline on maternal cardiac function, J.A.M.A. (In press.)
3. Wallace, R. L., Caldwell, D. L., Ansbacher, R., and Otterson, W. N.: Inhibition of premature labor by terbutaline, Obstet. Gynecol. **51**:387, 1978.
4. Jacobs, M. M., Knight, A. B., and Arias, F.: Maternal pulmonary edema resulting from beta-mimetic and glucocorticoid therapy, Obstet. Gynecol. **56**:56, 1980.

Technique to facilitate delivery of high-floating head at cesarean section

To the Editors:

I have read with interest the article by Warenski (AM. J. OBSTET. GYNECOL. 139:625, 1981).

The application of a small cup (No. 4) of the vacuum extractor seems, to me, to be even less traumatic for infant and mother.

André De Clercq, M.D.

Centre Hospitalier Kigali
B.P. 934
Kigali Rwanda, Africa

Reply to Dr. De Clercq

To the Editors:

Although advocates of the Mahlmstrom vacuum extractor have sometimes extended its use to the delivery of the head at low-segment cesarean section, the elapsed time for a safe and reliable application would appear to be a disadvantage in this situation. The silicone rubber vacuum cup of Kobayasha, which has recently become available, can be applied more promptly and might provide a workable alternative to the forceps technique that I described in aiding the delivery of the high-floating head at cesarean section.

James C. Warenski, M.D.

Department of Obstetrics and Gynecology
University of Utah Medical Center
Salt Lake City, Utah 84132

Technique for calculating transfusion volume required to achieve desired hematocrit

To the Editors:

The article, "Isovolumetric partial exchange transfusion in the management of sickle cell disease in pregnancy," by myself, Garcia and Welt, was published on page 403 of the October 15, 1981, issue of the JOURNAL. Since returning the galley proofs of that article, I have discovered a simple technique for calculating the volume of transfusion required to achieve a desired hematocrit:

$$V_t = V \cdot \ln \left\{ \frac{h_t - h_o}{h_t - h_d} \right\},$$

where V is the patient's estimated blood volume, h_t is the hematocrit of the transfusate, h_o is the patient's initial hematocrit, and h_d is the desired hematocrit. V_t is the volume of transfusate required to achieve the desired hematocrit.

David A. Nagey, M.D., Ph.D.

Department of Obstetrics and Gynecology
University of Maryland School of Medicine
Baltimore, Maryland 21201

Endocervical lavage in early pregnancy

To the Editors:

Like your contributors Goldberg and associates (AM. J. OBSTET. GYNECOL. 138:436, 1980), my colleagues and I have been investigating the use of endocervical lavage in early pregnancy. We collected aspirates from 12 first-trimester pregnancies prior to termination and prepared them for histologic studies; microscopic analysis of the material showed that all contained fragments of decidua, as well as obvious villous material. Cells cultured from the specimens were karyotyped and tissue typed, and comparison was made with the karyotypes of

Table I. Results of histologic, cytogenetic, and tissue-typing studies

Case No.	*Gestation period (wk)*	*HL-A detected on maternal lymphocytes*	*HL-A detected on cells cultured from endocervical aspirates*	*HL-A detected on fetal fibroblasts*	*Karyotype of cells cultured from endocervical aspirates*	*Karyotype of fetal fibroblasts*	*Histologic features of endocervical aspirates*
1	12	ND	ND	ND	46,XX	ND	Chorionic villi and decidua present
2	11	ND	ND	ND	46,XX	ND	Chorionic villi and decidua present
3	10	ND	ND	ND	46,XX	ND	Chorionic villi and decidua present
4	8	ND	ND	ND	46,XX	ND	Chorionic villi and decidua present
5	10	ND	ND	ND	46,XX	46,XX	Chorionic villi and decidua present
6	10	ND	ND	ND	US	46,XX	Chorionic villi and decidua present
7	12	ND	ND	ND	46,XX	46,XY	Chorionic villi and decidua present
8	11	ND	ND	ND	46,XX	46,XX	Chorionic villi and decidua present
9	12	2,19; 12, 35	2,19; 12,35	3,19; 8,35	46,XX	46,XX	Chorionic villi and decidua present
10	12	2,11; 13,18	2,11; 13,18*	1,11; 10,-	46,XX	46,XX	Chorionic villi and decidua present
11	12	1,3; 12,35	1,3; 12,35	1,2; 7,12	46,XX	46,XY	Chorionic villi and decidua present
12	12	1,29; 12,16	1,-; 12,-	1,9; 5,-	46,XX	46,XY	Chorionic villi and decidua present

HL-A = Human lymphocyte antigen. ND = Not done. - = Antigen not detected. US = Unsuitable for analysis.
*Weak reaction.

fibroblasts cultured from the corresponding fetuses and maternal tissue types (Table I). We found that in the three cases in which the fetus was male (46,XY), the karyotypes of cells cultured from endocervical aspirates were normal female (46,XX). Tissue-typing studies on two cases in which the fetus was female revealed that the tissue types of the cells cultured from endocervical aspirates were identical with those of the mother. Our results, like those of Goldberg and associates, left us in no doubt that the cells cultured from the aspirates were maternal in origin.

We were, however, so impressed with the amount of trophoblast material present in the specimen and the ease with which it was obtained that we persisted in our attempts to culture fetal cells from the sample. Study of the medical literature reveals that intact trophoblast tissue grows slowly in culture because of the inhibiting effect of the trophoectodermal layers, and this seemed to us to be a most likely reason why the maternal cells overgrew the fetal cells. We have, therefore, developed a method for eliminating the maternal cells and syncytiotrophoblast and cytotrophoblast cells from the aspirates and prepared pure cultures of rapidly growing villous mesenchyme cells (Brit. J. Obstet. Gynaecol. Accepted for publication). We have now prepared over 30 aspirates by this technique, and in each case, pure cultures of rapidly growing fetal cells have been obtained. These encouraging results raise the possibility that sampling of trophoblasts by endocervical aspiration in the first trimester may, in fact, be a feasible method of obtaining fetal cells for earlier antenatal diagnosis.

D. V. Coleman, M.D., M.R.C.Path., F.I.A.C.
Department of Pathology
St. Mary's Hospital Medical School
London W2 1PG, England

CAMP versus cAMP

To the Editors:

I have read the paper by Lewin and Amstey[1] with great interest. Clearly, the fact of prior infection of the pregnant woman with streptococcus of group B may well be important in regard to the danger to the neonate from such infection. One important factor in facilitating proper interpretations in such studies is the very act of determining whether each streptococcal infection is, indeed, of a group B variety or one of the others, most usually the common group A. There are several methods for making this determination in the laboratory. The authors, or rather their consulting laboratory, have made use of a method that is called the CAMP reaction *or* the CAMP factor method. I regret to point out that the authors have wrongly identified the meaning of this term. They have stated that the identification of the bacteria was done by the "cyclic adenosine monophosphate (CAMP) reaction." In fact, this is not true, and the proper acronym for cyclic