In case 3 reported by Hofstadler et al. intrauterine ductal closure was detected after maternal administration of glucocorticoids and metamizole (Baralgin). Glucocorticoids have been shown to inhibit prostaglandin synthesis through inhibition of the release of prostaglandin precursors such as arachidonic acid. In addition, glucocorticoids appear to reduce the sensitivity of the ductus arteriosus to prostaglandin $E_2$. Constrictive effects of glucocorticoids on the fetal ductus arteriosus have been well described both in animal studies and in the human fetus. In general, these effects seem to be relatively mild and brief,[1] but also complete ductal closure after maternal administration of glucocorticoids has been well documented prenatally.[2] Additionally, constrictive effects of metamizole on the fetal ductus arteriosus have been demonstrated in animal studies.[3]

Because consistent dose-dependent constriction of the fetal ductus arteriosus was found with the majority of nonsteroidal antiinflammatory drugs studied in animal experiments,[3] in cases of intrauterine ductal closure the history of medication during pregnancy, including over-the-counter drugs should be meticulously evaluated.

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#### REFERENCES

1. Wasserstrum N, Huhta JC, Mari G, Sharif DS, Willis R, Neal NK. Betamethasone and the human fetal ductus arteriosus. Obstet Gynecol 1989;74:897-900.
2. Chao RC, Ho ESC, Hsieh KS. Doppler echocardiographic diagnosis of intrauterine closure of the ductus arteriosus. Prenat Diagn 1993;13:989-94.
3. Momma K, Takeuchi H. Constriction of fetal ductus arteriosus by non-steroidal anti-inflammatory drugs. Prostaglandins 1983;26:631-43.

*6/8/78882*

### Reply

*To the Editors:* We appreciate the comments by Mielke and Gonser. It is correct that in two of the cited papers (Truter et al., 1986, and Chaoui et al., 1989) closure of the fetal ductus arteriosus was associated with maternal administration of indomethacin, a well-known inhibitor of prostaglandin synthesis. All four cited papers reported about complete closure of the human fetal ductus arteriosus and in only two of them closure occurred "spontaneously" (Becker et al., 1977, and Kohler et al., 1978).

In all four cases careful maternal history was obtained. In cases 1, 2, and 4 the mothers received no drugs known to influence patency of the fetal ductus arteriosus before fetal echocardiography. In case 3 the mother received glucocorticoids 11 days before the fetal echocardiogram, which theoretically could have induced ductal closure. However, the ductus did not reopen with discontinuation of the medication, which is inconsistent with the reported experience with this drug effect.[1] We agree that administration of phenyldimethylpyrazolon might have an impact on ductal patency. However, because of the clinical presentation (signs of severe right heart failure with ascites), it was likely that ductal closure had already occurred at least several days before this drug was given. Therefore this case was attributed to spontaneous closure.

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#### REFERENCE

1. Waffarn F, Siassi B, Cabal LA, Schmidt PL. Effect of antenatal glucocorticoids on clinical closure of the ductus arteriosus. Arch Pediatr Adolesc Med 1983;137:336-8.

*6/8/78883*

## Sublingual aerosol nitroglycerin for uterine relaxation in attempted external version

*To the Editors:* We have previously reported the efficacy of sublingual aerosol nitroglycerin in urgent and emergency situations.[1] To further identify usefulness of this agent form, we attempted a study of external versions with use of nitroglycerin.

With institutional review board approval and patient informed consent, 10 patients were entered into this pilot study. No randomization was attempted. All patients had pulse oximetry and noninvasive oscillometric blood pressure device monitoring applied, and baseline blood pressure, heart rate, and oxygen saturations obtained, as well as a fetal monitoring strip. With anesthesia personnel in attendance and recording vital signs, the obstetrician(s) performing the external version were asked to estimate the baseline uterine tone from relaxed to tense on a scale of 0 to 3. Sublingual nitroglycerin was then administered, 0.8 mg, and in approximately 60 seconds manipulation was instituted under ultrasonic guidance. On occasion, the nitroglycerin was repeated if indicated. Maternal symptoms, blood pressure, heart rate, oxygen saturation, and fetal heart rates were monitored for up to 30 minutes after version attempts, with data recorded at 2-minute intervals. The obstetrician evaluated the uterine tone at similar short intervals after the nitroglycerin was administered.

Nine patients were successfully studied. One case was dropped; it was very complicated and with interrupted attempts. One fetus was transverse, the other eight were breech. Only one attempted version was successful (11%). Five of the nine were reported by the obstetrician to have reduced uterine tone after the nitroglycerin, four were noted to have a relaxed uterus at the outset, and none had an increase in uterine tone. Only one fetus had bradycardia to a rate of 70 within 2 to 3 minutes of the beginning of manipulation, which rapidly returned to normal with tilting the patient to the left and cessation of manipulation. Maternal complaints were mild and short