# A COMPARISON OF 2 PROSTAGLANDIN ANALOGUES IN COMBINATION WITH ETHACRIDINE LACTATE FOR SECOND TRIMESTER ABORTION;

## CARBOPROST V/S SULPROSTONE

### (An Intrauterine Pressure Monitoring Study)

By

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## SUMMARY

**It is important to select the best prostaglandin analogue available when performing abortions. This pilot study used continuous intra-uterine pressure monitoring in twelve patients undergoing second trimester abortion in order to compare the efficacy of two prostaglandin analogues—Carboprost and Sulprostone, when used in combination with extra-amniotic ethacridine lactate as abortifacients. It was observed that the induction-abortion interval was significantly shorter with Sulprostone as compared to Carboprost. Because of the similarity in the uterine contractions induced by both analogues (as demonstrated by the uterine pressure tracings) this difference can be explained by hypothesising that Sulprostone induces a greater degree of cervical priming than Carboprost.**

*Introduction*

The search for the ideal prostaglandin analogue for abortions still goes on. At present, there are two different prostaglandin analogues available commercially-Carboprost (15 methyl prostaglandin F2X manufactured by Upjohn, USA) which is a prostaglandin F2X derivative and Sulprostone (16 phenoxy-w-17, 18, 19, 20 tetranor prostaglandin E2 methyl sulfonylamide, manufactured by Schering, Germany) which is a prostaglandin E2 derivative (Population Reports, 1980). This was a pilot study which was carried out in order to compare the efficacy of these two prostaglandin analogues as abortifacients, when used in conjunction with extra-amniotic ethacridine lactate in second trimester abortions. Continuous intra-uterine pressure monitoring was used in order to document their effectiveness in inducing uterine contractions objectively.

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*Materials and Methods*

Twelve patients who presented for second trimester abortions were selected

for the study after obtaining informed consent. The patients were divided into two groups randomly. For all patients 150 ml ethacridine lactate (0.1% solution of 6, 9- diamino-2-oxyethyl acridine lactate in water) was instilled extra-amniotically in the usual fashion. Eight hours later, patients in Group I received a single intramuscular injection of 250 ug of Carboprost; whereas Group II received a single intramuscular injection of 500 ug of Sulprostone. The groups were comparable with respect to gestational age and parity. Patient details are summarised in the Table.

Intrauterine pressure was monitored in all patients using the open-ended transabdominal catheter technique. The intrauterine catheter (epidural catheter manufactured by Vygon, France) was threaded into the amniotic cavity transabdominally and connected to a pressure transducer (manufactured by Gould-Statham, USA) which was connected to an amplifier-recorder (Grass Model 7D Polygraph, USA). Uterine activity was continuously monitored till the products were expelled.

The intrauterine pressure graphs were analysed in order to objectively compare the differences in uterine contractions induced by the two prostaglandin analogues.

*Results*

All the patients aborted completely with an induction-abortion interval ranging from 10 hr to 26 hr 20 min (mean: 20 hr 10 min) for Group I; and 10 hr 30 min to 20 hr 20 min (mean: 14 hr 20 min) for Group II. There were no significant complications in this study. Side effects were acceptable in both groups (Table). Vomitting and diarrhea were commoner in Group I.

Analysis of the intrauterine pressure graphs in the two groups revealed the following major difference, as exemplified by the two representative graphs reproduced (Figs. I and II).

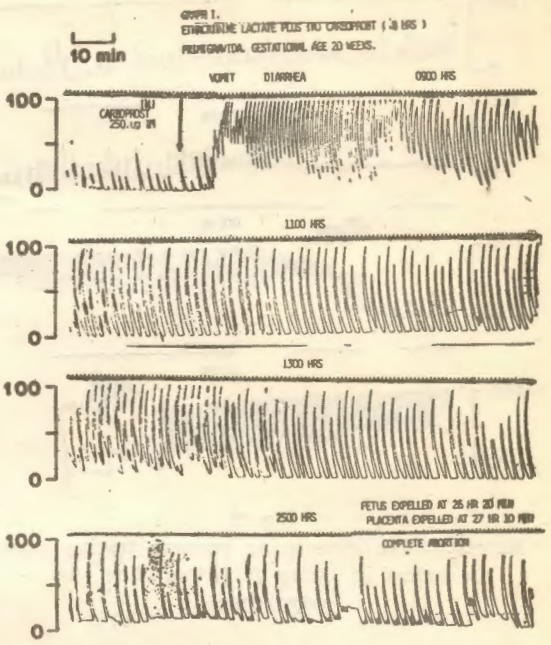


Fig. 1
Representative intrauterine pressure tracing from a patient in Group I (Ethacridine plus Carboprost).

Group I. There was little uterine activity observed after the instillation of the ethacridine lactate, and the uterus remained quiescent. Following the injection of Carboprost, after a short latent period of 5 minutes, there was a sharp rise in baseline tone. The hypertonus persisted for 45 minutes, and was gradually replaced by regular, high amplitude uterine contractions, which finally resulted in the spontaneous expulsion of the fetus 26 hr 10 min after ethacridine instillation.

Group II. Following the instillation of the ethacridine lactate. there were few irregular contractions. The injection of Sulprostone at 8 hrs resulted in a sharp rise in baseline tone. The hypertonus peaked at 30 minutes, after which it was gradually replaced by strong, regular

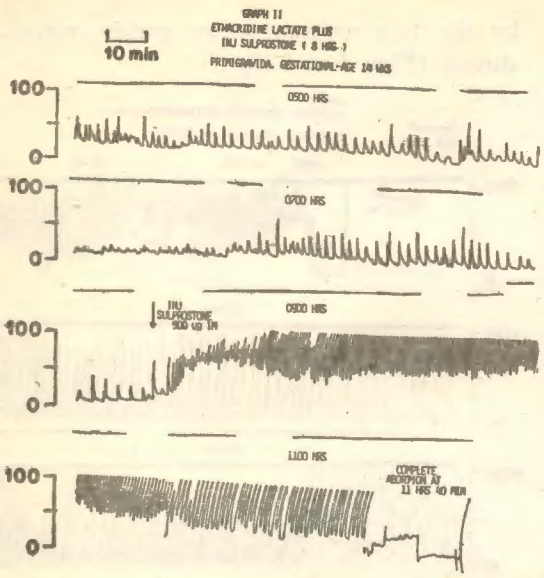


Fig. 2
Representative intrauterine pressure tracing from a patient in Group II (Ethacridine plus sulprostone).

uterine contractions, with a frequency of 1 per minute. The hypertonus persisted; and cervical dilatation occurred rapidly, resulting in the expulsion of the products 11 hr 40 min after ethacridine instillation.

We observed that the intrauterine pressure curves in both groups were similar with respect to the amplitude and frequency of induced contractions. What was remarkable about the Sulprostone induced contractions however was that they achieved cervical dilatation and fetal expulsion much sooner, with a considerably shorter induction-abortion interval.

*Discussion*

Since the induced uterine activity is similar with both prostaglandin analogues, this difference in induction-abortion intervals most probably reflects an independent effect which Sulprostone alone has on the cervix. We hypothesise that Sulprostone induces cervical priming and dilatation in second trimester abortions, in addition to its action on the uterine muscle.

Though this effect of Sulprostone on cervical priming in second trimester abortions has never been reported earlier, it appears to be the most likely explanation for the differences in the induction-abortion interval observed in the two groups, given the marked similarity in the uterine contractions induced in both the groups. This hypothesis is corroborated by the fact that intramuscular Sulprostone has been used for cervical priming prior to first trimester abortions by a number of investigators (Karim, 1978; Bygdeman, 1980; Fehrmann, 1983).

A cervical priming effect of Sulprostone can explain the difference observed in the induction-abortion interval in the two groups. If the resistance offered by the cervix is reduced, the uterine contractions become more efficient in inducing fetal expulsion, thus reducing the amount of uterine "work" needed to achieve abortion.

We therefore conclude that the cervical priming effect of Sulprostone which is presumably not shared by Carboprost makes Sulprostone the prostaglandin analogue of choice for second trimester abortions. This was a pilot study in which a small number of patients were monitored invasively. These observations need to be confirmed in a larger clinical trial.

*References*

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