

# USE OF LOMODEX IN MANAGEMENT OF FETAL DISTRESS

by

S. AGRAWAL,\* M.B.B.S., D.G.O., M.D.

and

M. K. DHAKTE,\*\*

## Introduction

The majority of perinatal morbidity and mortality is due to fetal and neonatal anoxia. The problem of fetal distress has very rightly been referred to as 'obstetrician dilemma.'

Asphyxia leads to lowering oxygen tension in the fetal blood which is recognised as fetal distress before onset of labour or during labour.

One of the earliest manifestations of fetal distress is increase or decrease of fetal heart rate, excessive fetal movements and meconium stained liquor.

The subject of this study was to see if by improving the blood circulation and oxygenation to the placental site, fetal distress could be alleviated at least for sufficient time to allow vaginal delivery.

## Material and Methods

One hundred cases of fetal distress in the first and second stages of labour were included in the present study admitted in Government Medical College and Hospital, Nagpur, from November 1977 to November 1978. The study was confined to vertex presentation, where there was no obvious mechanical cause for fetal distress. Patients with a bad obstetric history were excluded. Fetal distress was

judged on—1. alteration in rate of fetal heart.

(a) tachycardia above 160/min.

(b) bradycardia below 100/min. with or without irregularity.

2. Meconium staining of liquor as noticed on spontaneous or artificial rupture of membranes.

Twenty-five cases of fetal distress without Lomodex were taken as control group to compare the effect of Lomodex.

An intravenous infusion of 500 ml. of Lomodex in 5% dextrose was given over a period of 90 minutes. The fetal heart was recorded every 15 minutes. If the fetal heart improved, labour was allowed to continue and spontaneous delivery awaited. Forceps was only applied in cases with prolonged second stage (after one hour of full dilatation of cervix). At the time of delivery, condition of baby was observed and the cause of fetal distress e.g. cord around neck, true knots, scanty liquor etc. were noted. Other causes of fetal distress such as toxæmia of pregnancy, post maturity, etc., were noted.

## Observations and Results

In study group of 100 cases 77% cases showed changes in fetal heart rate 37% showed tachycardia, 35% revealed bradycardia and 5% had irregularity with bradycardia. In 23% cases liquor was meconium stained but fetal heart rate was normal was shown in Table I.

\*Reader in Obstetrics and Gynaecology.

\*\*Post-Graduate Student,

Government Medical College and Hospital, Nagpur.

Accepted for publication on 10-5-79.

TABLE I  
Character of Fetal Distress in Control and Study Groups

No. of cases	Tachycardia	Bradycardia	Irregular FHR	Meconium stained liquor with normal FHR	Successful	Failed
Study group 100	37%	35%	5%	23 (23%)	86 (86%)	14 (14%)
Control group 25	40%	36%	8%	4 (16%)	11 (44%)	14 (56%)

Out of 77% cases with changed fetal heart rate, in 41% cases liquor was clear and in 36% of cases liquor was meconium stained.

In study group, out of 77% cases in which fetal heart rate was disturbed, in 63% cases fetal heart rate returned to normal limits; within half an hour in 37% cases, within 1 hour in 24% cases and within 2 hours in 2% cases. There was no improvement at all in 14% cases even though lomodex was given for over 2 hours. In 23% cases of fetal distress due to meconium stained liquor only and no change in fetal heart rate, the infusion of

lomodex helped in maintaining the normal fetal heart rate which would have otherwise become irregular with the progress of labour.

In 25 control cases of fetal distress which were not given lomodex, 44% cases improved fetal heart rate within 1 hour. In 40% cases there was no improvement at all. While in 16% cases fetal heart rate was regular but liquor was meconium stained.

In study group, the cause of fetal distress was toxæmia of pregnancy in 20% cases, in 10% cases cord around the neck was found, in 4% cases prolonged labour, in 2% cases intrauterine infection and in 1% cases postmaturity of over 15 days was found. In 63% cases no cause for fetal distress was found.

In control group of fetal distress, in 28% cases toxæmia was found, in 20% cases cord around neck, and in 48% cases no cause was detected.

In 25 control cases, 12 cases (48%) delivered normally, in 8 cases (32%) low forceps was applied to cut short second

TABLE II  
Time of Improvement of FHR After Starting Lomodex

Time of improvement after Lomodex	No. of cases	Percentage %
Within ½ hour	37	37%
Within 1 hour	24	24%
Within 2 hours	2	2%
No improvement after 2 hours	14	14%

TABLE III  
Showing Mode of Delivery in 125 Cases

	No. of cases	Vag. deli.	Low forceps	Vaccum extraction	Caesarean section
Study cases	100	64 (64%)	17 (17%)	4 (4%)	15 (15%)
Control cases	25	12 (48%)	8 (32%)	—	5 (20%)

stage of labour when fetal heart rate was not improved, in 20% cases caesarean section was done because of failure of improvement and no progress in labour.

Out of 100 study cases of fetal distress, 64% cases delivered normally, 17% cases by forceps when fetal heart rate returned to normal (indication in all was prolonged second stage beyond 1 hour after full dilatation of cervix), in 4% cases vacuum was applied, after fetal heart rate returned to normal because of incomplete rotation of head. In 15% cases fetal heart rate did not improve and bradycardia increased so caesarean section was done as shown in Table III.

In control cases of fetal distress without lomodex, the Apgar score was less (average 6.6) as compared to study group (average 7.5).

There were 2 neonatal deaths, 1 after 1 hour of birth due to severe fetal distress and failure of lomodex, in other after 3 days of birth due to intrauterine infection. Deaths were not related to lomodex.

The fetal salvage in our series of fetal distress was 98%.

No maternal death was found in the present series.

The maternal blood sugar level and cord blood sugar level was studied in both control and study groups.

In the control group, the mean maternal blood sugar level was 79.5 mg.% and the range was from 60 mg.% to 105 mg.%. The mean cord blood sugar level in control group was 50 mg.% and the range was found 40 mg.% to 70 mg.%.

In 100 study cases in which lomodex was given for more than one hour, the mean maternal blood sugar level was 121.8 mg.% and the range was from 100 mg.% to 185 mg.%.

The mean cord blood sugar level was 77 mg.% and range was from 62 mg.% to 105 mg.%.

So the higher levels of maternal and fetal blood sugar was found in study cases receiving lomodex infusion in comparison to control group who were not given lomodex infusion.

#### Discussion

In the present study lomodex was given in cases of fetal distress in first and second stages of labour to improve fetal heart rate and to allow vaginal delivery as far as possible.

Lomodex is a dextran with an average molecular weight of 40,000. It acts by decreasing the viscosity of blood, preventing intravascular sludging and by this means the supply of blood through the small vessels improve. Temporary expansion of plasma volume takes place and it should be used carefully in patients with cardiac disease. Its use is contra-indicated in thrombocytopenia, pulmonary edema and sepsis.

In the present study this antisludging property of lomodex of improving blood flow of the respiratory centres of fetus was utilised to cure fetal distress in the first stage of labour.

The study of lomodex in fetal distress was compared with the control cases of fetal distress without lomodex. It was seen that in control cases without lomodex, the rate of normal vaginal delivery was 48% as compared to 64% in study group. While rate of operative delivery was 52% (i.e. low forceps delivery in 32% of cases and caesarean section in 20% of cases) as compared to 36% of study group in which low forceps was applied in 17% of cases, in 4% vacuum and in 15% cases caesarean section was done.

In control group, fetal heart rate returned to normal in only 44% of cases and in 40% of cases there was no improvement at all. While in study group fetal heart

rate returned to normal within 1 hour in 84% of cases and no improvement in 14% cases.

The Apgar score was more in the study group (average 7.6) compared to control group (average 6.6) due to improved uteroplacental circulation and increased oxygenation.

So it is confirmed that lomodex is definitely useful in cases of fetal distress to allow more vaginal deliveries and to decrease the rate of operative delivery and therefore the morbidity and mortality of mother and baby.

Bonchez and Kreater (1968) reported excellent effects on the cardiac rhythm of the fetus doubtlessly due to improvement of the uteroplacental circulation with I.V. Lomodex.

In Jones (1964) series of cases of fetal distress showed improvement in fetal heart rate in 74% cases in 1 hour after starting lomodex infusion. In Gupta's (1973) series, improvement occurred in 87.5% of cases while in the present series in 84% of cases in one hour of starting lomodex infusion.

In Jones series (1964) the rate of normal vaginal delivery was 42%, low forceps delivery in 20% cases, vaccume in 2% and caesarean section in 18% of cases. While in Gupta's series normal vaginal delivery occurred in 72.5% of cases, low forceps in 22.5% and 5% cases caesarean section was done.

In the present series, normal vaginal delivery occurred in 64% of cases, in 17% cases low forceps in 4% vacuum extraction and in 15% of cases caesarean section was done.

In Jones series success rate was 82%,

in Gupta's series (1973) 95%, while in the present study success rate was 86%. In Jacob's (1974) series the success rate was 62% with lomodex.

Thus the use of lomodex in fetal distress in labour is very useful to the practising obstetrician.

#### Summary

1. A study has been made on the efficiency of lomodex in 100 labour cases with fetal distress.

2. 500 ml. of lomodex in 5% dextrose solution was given, I.V. for a period of 90 min. Single infusion of 500 ml. achieved the desired improvement within  $\frac{1}{2}$  hour to 2 hours.

3. Lomodex infusion was highly satisfactory in the relief of fetal distress. The results were excellent in 86% of cases, out of which 64% delivered normally, 17% by low forceps and 4 by vacuum extraction and 15% by caesarean section.

4. It can be concluded that, lomodex infusion is effective in alleviating the fetal distress to allow sufficient time for vaginal delivery.

#### Acknowledgement

We are thankful to Dr. P. C. Bansal, M.S., F.R.C.S., Dean, Government Medical College, Nagpur for allowing us to publish the Hospital data.

#### References

1. Bonchez, H. and Kreater, M.: *Excerpta Medica; Obstet. Gynec.* 21: 1456, 1968.
2. Gupta, P.: *J. Obstet. Gynec. India.* 23: 1973.
3. Jones, J. B.: *Brit. Med J.* 2: 909, 1964.
4. Jacob, S. I. and Bhargava, H.: *J. Obst. & Gynec. India.* Vol. 24 No. 3., June 1974, P. 272-278.