USE OF TRANSBUCCAL DESAMINO-OXYTOCIN IN ACCELERATION AND INDUCTION OF LABOUR

by

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The science of Obstetrics has advanced to an extent where stimulation of the uterus for uterine inertia or induction of labour is a routine phenomenon in any Obstetric Department. Any advance in the methodology of this procedure is thus a welcome addition to the obstetrician's armamentarium.

In 1953, a hormone of the neuro-hypophysis, namely oxytocin, was synthetically prepared for the first time and later this was available on an industrial scale. A number of similar compounds have been synthetically prepared and pharmacologically investigated. Intravenous syntocinon is widely used in obstetric field. Intravenous syntocinon along with amniotomy has been established as a safe procedure in obstetrics in expediting and augmenting labour (Garud and Simmons 1968).

ODA-914 is a new synthetic derivative of oxytocin where there is a lack of an aminogroup in position one (Jansson 1966).

It is an interesting fact that the presence of a free aminogroup in position one is not necessary for effectiveness of oxytocin. Active labour was produced by a dose less than half by weight that is required for oxytocin. Besides, syntocinon and natural oxytocin are inactivated irreversibly by serum oxytocinase specific in pregnancy and by tissue pepticlases.

In the blood desamino-oxytocin cannot be inactivated by the serum oxytocinase. A certain enzyme in the erythrocytes can inactivate ODA-914 and also natural oxytocin (Semm 1967). This makes ODA-914 twice as powerful as oxytocin in its action on the uterus, although its pressor and antidiuretic effects are same. The advantage of this drug is that it is simple and safe to administer and avoids the use of intravenous drip which is given to patients when syntocinon is used.

Methodology

This is an open clinical study on the use of buccal tablets of ODA-914 in 150 patients over a period of 6 to 8 months, i.e. from May 1973 to December 1973. No controls have been used. The patients

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were selected from K.E.M. Hospital and Cama & Albless Hospital (both teaching institutions), Bombay, India.

Selection of Patients

Patients were selected on a random basis. Women coming with false pains and staying at long distances formed a sizeable group. This is a problematic category as neither the patients nor the hospital can afford unnecessary stay.

Each patient was assessed clinically regarding duration of pregnancy, presentation and position of the foetus. Further tablets are administered only if contractions appear to be weakening. If satisfactory contractions are not established after 500 units of the drug, the therapy should be discontinued for at least 24 hours. In the event of tablets being swallowed accidentally by the patient, further tablets should not be administered until the 30 minute interval has elapsed.

Material and Method

The drug was administered in 4 groups of patients (Table I). There were 60

TABLE I

Type of Cases	Total	Primi-para	Multi-para
1. Uterine inertia	60	27	33
2. Induction of labour:			
(a) Normal full-term patients with false pains	59	14	45
(b) Post-maturity	7	1	6
(c) Miscellaneous:	9	1	8
Diabetes	2	—	2
Accidental haemorrhage	3	—	3
Toxaemia of pregnancy	2	1	1
Pre-diabetes with post-maturity	1	—	1
Abnormal foetus (Anencephaly)	1	—	1
3. Intra-uterine deaths	10	2	8
4. M.T.P.	5	—	5
TOTAL	150	42	108

Classification followed here is by Knew, *et al* (1968). This classification takes into account not only the state of cervix but also the station of the presenting part regardless of the parity of patient and rupture of membranes.

Dosage

One tablet of 50 I.U. is administered bucally every 30 minutes until rhythmic and satisfactory contractions occur, after which therapy may be discontinued.

patients of uterine inertia, of whom 27 were primiparae and 33 were multiparae. There were 75 patients who were given the drug for induction of labour, out of which 16 were primiparae and 59 were multiparae. The third group of patients were those where intrauterine death of the foetus had occurred and labour was induced by ODA-914. There were 10 such cases. Lastly, 5 patients had intramniotic saline injection for medical termination of pregnancy and 24 hours

later ODA-914 tablets were given to stimulate uterine contractions and evacuate the uterus. Thus the drug was used in late and early pregnancy in a total of 150 patients.

Table II shows the pelvic score used by Khew *et al.*

TABLE II
Pelvic Score
(Khew, K. S., *et al*)

	0	1	2
Cervical effacement	tubular 2 cm. long	1-2 cm.	less than 1 cm.
Dilation of the cervix	firm	soft, not stretchable	soft and stretchable
Direction of the cervical os	sacral	axial	anterior
Station presenting part in relation to the ischial spines	above —2 cm.	—2 cm. to —1 cm.	—1 cm. to zero

Mark the score for each of the four parameters on the table.
Sum of the four scores—'Pelvic Score'.

Results

Table III indicates the results. In uterine inertia there was 100% success both in primiparae as well as multiparae. All the patients delivered in first 12 hours. The drug is specially useful in augmenting uterine action in primiparae breech deliveries and twin deliveries. In induction of labour a higher dosage of the drug was required. The success rate was 70%. When the pelvic score is 3 and below, the response of the uterus is low, and when the pelvic score is 4-8, the response is better. In early pregnancy, i.e. in patients with intrauterine deaths or medical termination of pregnancy patients, it is 80% and 60% successful respectively.

TABLE III
Results

Type of Cases	Total	Successful	% of Success
Uterine inertia			
(a) Primiparae	24	24	
(b) Multiparae	36	36	
Total:	60	60	100%
Induction of labour			
(a) Primiparae	16	6	
(b) Multiparae	59	41	
Total:	75	47	70%
Intra-uterine deaths	10	8	80%
Medical termination of pregnancy	5	3	60%

Dosage schedule

Table IV shows that most of the patients with uterine inertia require 1-5 tablets.

TABLE IV

Dosage Schedule

No. of Tablets	Uterine Inertia		Induction of Labour		Intra-uterine Deaths		M.T.P.
	1st Course	2nd Course	1st Course	2nd Course	1st Course	2nd Course	
1	6	—	—	—	—	—	—
2	15	—	—	—	—	—	1
3	9	-	4	—	2	—	—
4	6	—	6	1	2	—	—
5	8	—	3	1	—	—	—
6	4	—	5	2	—	—	1
7	2	—	2	—	—	—	—
8	2	—	7	1	—	—	—
9	3	—	2	—	—	—	—
10	5	—	31	10	1	5	3

Nearly 75% of our patients responded to the maximum of 5 tablets. In contrast to this, in induction of labour. a much higher dose of tablets was required. Thirty-one patients required 10 tablets and in fact 15 of them required even second course.

Pelvic Score and Outcome

Table V shows the outcome of pelvic score; when pelvic score is 4 and above, the success rate was high. Table V shows that in all 28 patients in group Induction of Labour, where the drug was unsuccessful, the pelvic score was 2 in 10 patients, 3 in 6 patients.

Total duration of labour

Most of the patients with uterine inertia delivered in 6-8 hours. None from this group took more than 12 hours. In induction of labour also, the successful patients delivered within 24 hours. The patients who did not deliver in 48 hours, i.e. after 2 courses of ODA-914, had an alternative method of induction, i.e. by amniotony and syntocinon.

TABLE V

Pelvic Score

Pelvic Score	Successful		Unsuccessful	
	Uterine Inertia	Induction of Labour	Uterine Inertia	Induction of Labour
—	—	—	—	3
1	—	—	—	4
2	2	1	—	10
3	7	1	—	6
4	6	20	—	—
5	13	15	—	3
6	10	6	—	—
7	14	3	—	—
8	8	1	—	—

Complications

Table VI shows complications. Five patients had vomiting. It was controlled by symptomatic treatment (No. of tablets: 3 to 5). The patients delivered uneventfully. Two patients had mild foetal distress with foetal heart rate of 150-160/minute. One delivered normally after rupture of membranes and other being in second stage, was delivered successfully with low forceps. The Apgar score of both babies was over 8. It was difficult to attribute the cases of PPH and mild accidental haemorrhage to buccal oxytocin. Three patients had a mild hypertonicity of the uterus with mild accidental haemorrhage. The number of tablets given to these patients was 10. The drug was discontinued and the patient delivered normally. In these cases the uterine contractions were stimulated by the drug, but discontinuing the drug did not stop normal labour. Ulcers in mouth disappeared in 4 days.

TABLE VI
Complications

Post-partum haemorrhage	4	(Toxaemia, forceps, I.U. deaths hypermia)
Accidental haemorrhage	3	(Mild)
Vomiting	5	
Ulcers in mouth	1	
Foetal distress	2	

Foetal Outcome

Table VII shows the foetal outcome. There were 124 normal babies, 3 premature babies, and 1 hydrocephalous, which was tapped per vaginam during labour. One was anencephally which was diagnosed in pregnancy and an induction of labour was performed. There were no other complications. The drug did not affect the foetus adversely.

TABLE VII
Foetal Outcome

Normal babies	124
Premature still-births	1
Hydrocephalus (Tapped)	1
Anencephalus	1
Premature babies	2
Macerated still-births	6
Intra-uterine deaths	10
Medical termination of pregnancy	5
Total:	150

Patient Acceptance of the Drug

The buccal route of administration has been found to be extremely satisfactory both as regards patient's convenience as well as physician's. It has been found that the main advantage is that movements of the patients are not limited since there is no need for i.v. drip with this drug. ODA-914 tablet is sweet and tastes like sugar; therefore most of the patients have liked it. It has an advantage of avoiding psychological tension associated with drip.

Conclusion

We have reported the use of buccal tablets of ODA-914 in a total of 150 patients from K.E.M. and Cama & Albless hospitals.

(1) We have found the primary indication of buccal ODA-914 in patients with uterine inertia (100% success).

(2) In induction of labour, where the pelvic score is 4 and above, it usually succeeds (70% success).

(3) In the recommended doses it is a safe drug in labour and seems to have no adverse effect on the mother and the baby.

(4) Ease of administration and avoidance of psychological tension and desirable outcome point to greater scope for its use.

(5) It avoids unnecessary hospital stay and expense—a point in favour of developing countries.

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