Induction of Labour

DESAMINO-OXYTOCIN (ODA.914) COMBINED WITH ARTIFICIAL RUPTURE OF THE MEMBRANES*

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SUMMARY

Desamino-oxytocin (ODA.914), used immediately after artificial rupture of the membranes, is a most satisfactory method of inducing labour. The induction - delivery interval is shortened and more than 90% of patients are delivered within 12 hours. No untoward maternal or foetal side-effects were noted. The method allows of self administration by co-operative patients. It is readily accepted both by the patients and the supervising nursing staff.

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The hazards of induction of labour are lowered when the induction-onset of labour and the induction-delivery intervals are reduced, provided the mother or foetus are not subjected to undue risk.[1,2] It is accepted that the most successful methods of induction combine amniotomy (artificial rupture of membranes) with the immediate use of an oxytoxic.[3-5]

Craig[3] showed that such a method using buccal oxytocin (Syntocinon) after amniotomy is both effective and safe. Desamino-oxytocin (ODA.914) is an analogue of oxytocin and was first synthesized by Du Vigneaud and co workers in 1960.[6] De Jager[7] has reported on a small series of 25 cases of surgical induction of labour followed by ODA.914 administered by the buccal route. The method was effective. A larger series of 217 cases is now detailed, all patients having been personally managed by the author.

PRESENT STUDY

Following a soap-and-water enema and a hot bath, all patients had a surgical induction of labour performed. The cervix was digitally stretched and, if possible, the membranes were stripped from the internal os. The forewater membranes were ruptured and as much liquor amnii as possible was allowed to drain. To improve drainage patients were allowed to walk about immediately after the amniotomy unless a general condition such as severe pre-eclamptic toxaemic indicated bed rest. Following amniotomy ODA.914 was administered by the insertion of the tablets in the parabuccal space between the gum and cheek. The tablets were supplied in two forms: (*i*) a 25-unit—human-unit tablet (1 HU ODA. intravenously being equivalent in terms of effect on the human uterus postpartum to 1 international unit (IU) oxytocin). Assay against oxytocin using chicken blood-pressure, however, shows 1 HU to be equal to only 0·7 IU. Therefore a change-over to IU dosage was made by the manufacturers and a chicken-unit tablet supplied. (*ii*) A 50-unit - chicken-unit tablet, where 1 unit equalled 1 IU oxytocin. The majority of patients were managed with this second preparation.

Dosage was as follows: 1 tablet half-hourly for 4 - 6 doses. If co-ordinate uterine contractions were established, i.e. at least 2 min 20 sec of contractions every 10 minutes with no individual contraction less than 35 - 40 seconds, a single tablet at half-hourly intervals was maintained until delivery. If co-ordinate uterine action was not established the dose was doubled to 2 tablets half-hourly and after a similar interval redoubled to 4 tablets half-hourly if necessary. Only 5 patients required the 4-tablet regime. In every case the dose was maintained until delivery. In the majority of cases the patient or her husband was responsible for seeing that the dose was taken at the correct time. The indications for induction of labour corresponded to those detailed in a previous report and were mainly pre-eclamptic toxaemia and postmaturity.[3]

RESULTS

A total of 217 patients were managed and were classified as per Table I.

TABLE I. CLASSIFICATION OF PATIENTS

Classification	No. of patients	Vaginal deliveries	LSCS	% Vaginal deliveries
Primigravidae	**85**	**84**	**1**	**98·5**
Multigravidae	**132**	**131**	**1**	**99·5**
Total	**217**	**215**	**2**	**99·0**

These figures are from a private practice where only a small number of patients are induced before the 38th week of pregnancy and where gross maternal and foetal conditions requiring induction are rarely seen. The high percentage of vaginal deliveries reflects this fact, but the efficacy of the induction scheme nonetheless remains the most important single factor as regards the low caesarean section rate.

The primigravid patient requiring caesarean section was induced for pre-eclamptic toxaemia at 39 weeks. Labour was established after 3 hours, but at 24 hours—with the

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blood pressure rising and the cervical dilatation only 4 cm —a caesarean section was performed. The multigravid patient requiring a caesarean section had had a previous abortion at 11 weeks' duration of pregnancy. Induction was performed at term for mild pre-eclampsia. An inco-ordinate uterine action was established and despite all therapy remained inco-ordinate for the 22 hours of labour. At caesarean section a septate uterus was noted.

TABLE II. INDUCTION - DELIVERY INTERVAL

	Time	No.	%
Primigravidae	Under 6 hours	37	43·5
	6 - 12 hours	38	44·5
	12 - 18 hours	7	8·0
	18 - 24 hours	2	2·5
	24 - 36 hours	1*	1·5
Multigravidae	Under 6 hours	88	66·6
	6 - 12 hours	39	29·7
	12 - 18 hours	4	3·0
	18 - 24 hours	1*	0·7

* Includes a caesarean section delivery.

Thus, in primigravidae 88% and in multigravidae 96% of patients had an induction - delivery interval of less than 12 hours. These figures compare very favourably with the figure of 74% with a similar series of patients in which buccal oxytocin instead of ODA.914 was used.[3] Clinically, therefore, ODA.914 appears to be more effective in the establishment and maintenance of labour than buccal oxytocin. The results are also comparable to those where intravenous oxytocin was used after amniotomy.[1,2,4,5,8] All these recent series show that over 80% of primigravidae and multigravidae are delivered within 12 hours following induction of labour. Therefore, from the point of view of clinical management, any spontaneous labour lasting longer than 12 hours should be considered prolonged.

No patient developed uterine hypertonicity while on ODA.914. Uterine hypertonicity when it occurs is probably due to overdosage or unrecognized cephalopelvic disproportion rather than from a specific hypersensitivity. If the aim with induction of labour is co-ordinate uterine action as defined, there need be no fear of hypertonicity with the use of buccal oxytonic agents. I have personally supervised the administration of buccal Syntocinon and ODA.914 in more than 300 patients and have seen no hypertonicity. In addition, these drugs have been used to enhance labour in many cases of uterine hypotonia without causing hypertonic contractions.

All 220 infants in this series were born alive and survived the first 6 weeks of life. Neonatal respiratory or other infections were not encountered more often than in patients with spontaneous onset of labour. The shorter the induction - delivery interval, the less the likelihood of amnionitis and intra-uterine infection, and consequent infection in the newborn infant.[8]

The method is well accepted by patients, who find the tablets pleasant to take and not uncomfortable in the mouth provided less than 4 per half hour are given. With the latter dose the parabuccal space soon becomes limited and the patient has constantly to replace tablets which tend to slip down over the teeth. Patients also prefer buccal oxytocin because it does not confine them to a bed as does intravenous oxytocin.

CONCLUSION

The results of this series indicate that ODA.914 is superior to buccal oxytocin in the induction of labour after amniotomy. Eighty-eight per cent of primigravidae and 96% of multigravidae were delivered within 12 hours. These results compare very favourably with any other method of induction of labour. The method is safe for both mother and foetus.

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REFERENCES

1. Turnbull, A. C. and Anderson, A. B. M. (1968): J. Obstet. Gynaec. Brit. Cwlth, **75**, 24.
2. *Idem* (1968): *Ibid.*, **75**, 32.
3. Craig, C. J. T. (1967): S. Afr. Med. J., **41**, 16.
4. Bradford, W. P. and Gordon, G. (1968): J. Obstet. Gynaec. Brit. Cwlth., **75**, 698.
5. Garud, M. A. and Simmons, S. C. (1968): *Ibid.*, **75**, 702.
6. Du Vigneaud, V., Winestock, G., Murte, V. V. S., Hope, D. B. and Kimbrough, R. D. (1960): J. Biol. Chem., **235**, 64.
7. De Jager, J. J. (1970): S. Afr. Med. J., **44**, 1033.
8. MacVicar, J. and Howie, P. W. (1970): J. Obstet. Gynaec. Brit. Cwlth, **77**, 817.