Buccal Oxytocin after Amniotomy for Induction of Labour

J. M. RITCHIE,* M.R.C.O.G.; J. M. BRUDENELL,* F.R.C.S., M.R.C.O.G.

Brit. med. J., 1967, 1, 608-609

In a recent article (Ritchie and Brudenell, 1966) we reported the results from using buccal oxytocin as a routine after amniotomy for induction of labour. By use of a standard course with a maximum of 3,800 units of buccal oxytocin and measuring the results in terms of induction delivery interval and the proportion not delivered 24 hours after amniotomy, improvements were obtained of approximately 30% and 60% respectively over control figures. These results were obtained without any increase of undesirable side-effects; in particular the incidence of uterine hyperactivity or foetal distress was not adversely affected.

In the discussion of the results we commented that further work was in progress to see whether the dose of buccal oxytocin could be reduced. This paper is an account of that work and the results obtained.

Method and Materials

Changes were made only in respect of the dose scale and timing of the first dose of oxytocin relative to the time of rupture of the membranes. We have continued to use a buccal oxytocin chart similar to that described in our earlier article, and, as before, we gave buccal oxytocin routinely after amniotomy to avoid any subconscious selection of cases which might influence results.

Four series of tests at differing dose schedules have now been completed as indicated in Table I. Series I is the series reported in the earlier article.

TABLE I.—Dose of Buccal Oxytocin (Maximum) in Each Series, International Units

Time (Hours):	A.R.M.	+½	+1	+1½	+2	+2½	+3	+3½	+4	+4½	+5	+5½	+6	+6½	+7	Total
Series I ..	Nil	Nil	100	100	200	200	400	400	600	600	600	600	—	—	—	3,800
" II ..	"	"	Nil	Nil	Nil	Nil	100	100	200	200	400	400	600	600	600	3,200
" III ..	"	"	"	"	"	"	100	100	200	200	200	200	200	200	200	1,600
" IV ..	"	"	"	"	"	"	50	50	100	100	100	100	100	100	100	800

Series I, II, and III made use of a standard 200-unit scored tablet of buccal oxytocin (Parke Davis and Co.). Series IV used a tablet which was identical except that it contained only 100 units of oxytocin.

The number of cases in each series is shown in Table II; in each series these were consecutive cases of primiparae or multiparae. In our earlier article we compared two control series—one matched with the test series for age, weight, parity,

TABLE II.—Number of Cases in Each Series

	Primiparae	Multiparae	All Cases
Control series ..	40	39	79
Series I ..	40	39	79
" II ..	40	39	79
" III ..	68	66	134
" IV ..	40	39	79

indication for induction, and foetal weight, and the other matched only with respect to primiparity and multiparity. The findings showed that parity was the important factor in influencing results.

* Department of Obstetrics, King's College Hospital, London S.E.5.

Results

The results are given in the multisectional table (Table III). Each section presents a particular facet of information for all four test series together with the control series if appropriate.

TABLE III.—Results

	Series	Primiparae	Multiparae	All Cases
Average induction-delivery interval in hours	Control	22.0	19.5	20.75
	I	16.5	11.25	13.75
	II	16.1	12.62	14.34
	III	18.45	15.1	17.0
	IV	17.75	20.25	19.0
Induction-delivery interval over 24 hours (% of total)	Control	28%	33%	30%
	I	15%	10%	12.5%
	II	15%	10%	12.6%
	III	23%	18%	20.6%
	IV	25%	28%	26.5%
Average dose in units	I	1,440	1,670	1,550
	II	1,570	1,350	1,460
	III	980	925	955
	IV	525	575	540
Incidence of overactivity (see text)	I	1 (2)	1 (2)	2 (4)
	II	2 (2)	0 (1)	2 (3)
	III	1 (3)	1 (3)	2 (6)
	IV	2 (2)	1 (3)	3 (5)

The first and second sections show the rise both in the induction-delivery interval and the proportion of delayed deliveries as the dose of buccal oxytocin was reduced. The results for series II indicate that the three-hour delay before beginning therapy at most only marginally reduces the good results obtained in series I with its one-hour delay. The three-hour delay has been adopted for all subsequent series since it

resulted in 13% of all cases requiring no oxytocin. In series III the results had fallen off quite considerably, and series IV was undertaken only because some obstetricians were claiming good results with still smaller doses. As expected the results were poor, and the fact that primiparae seemed to respond as well in series IV as in series III would be brought into better perspective by saying that they responded poorly in both series.

The third section of Table III shows the average dose of buccal oxytocin required, taking into consideration only those cases which actually received any oxytocin. The reduction in maximum dose with succeeding series is paralleled by a reduction in the average dose given, but this is a useless advantage since it is accompanied by an impairment of results.

The great dangers of buccal oxytocin are uterine rupture and foetal distress, both the result of excessive uterine activity. The fourth section of Table III shows the number of patients in our series who developed uterine overactivity, taking as our definition of overactivity prolonged contractions occurring every two minutes or contractions occurring more often than every two minutes. The open figures in this section of the table refer to the incidence of overactivity during the administration of the tablets or within two hours of the administra-

tion of the last tablet. The figures in parentheses refer to the incidence of overactivity occurring in patients who had either received no tablets at all or had received no tablets for over two hours.

There were no cases of true tetany and no cases in which it was felt that foetal distress was the result of the buccal oxytocin.

Comment

We feel satisfied that a routine small-dose course of buccal oxytocin has little to offer, and if any real advantage is to be

BUCCAL OXYTOCIN CHART

Name.....		Number.....						
Date	Time M.O. to Fillin	Contractions	Normal Dose (See notes)	Dose Given below	B.P.	Pulse	F.H.	Signature
A.R.M.			None	Nil				
+1 hr.			"	"				
+1 1/2 "			"	"				
+2 "			"	"				
+2 1/2 "			"	"				
+3 "			100 units	"				
+3 1/2 "			100 "	"				
+4 "			200 "	"				
+4 1/2 "			200 "	"				
+5 "			200 "	"				
+5 1/2 "			400 "	"				
+6 "			400 "	"				
+6 1/2 "			400 "	"				
+7 "			600 "	"				
+7 1/2 "			600 "	"				
+8 "			None	Nil				
+8 1/2 "			"	"				

Notes :

- (a) One whole tablet thus $\square\square = 200$ units of buccal pitocin.
 (b) If contractions are less frequent than 1 in 7 then the dose given should be as that indicated under the heading "normal dose."
 (c) If contractions are more frequent than 1 in 7 but not as often as 1 in 3, do not increase the dose, but give the same dose as was given half an hour previously.
 (d) If contractions are 1 in 3 (or more frequent) do not give any tablets.
 (e) If contractions are more frequent than 1 in 2, or are lasting longer than 60 seconds, then remove all tablets from the patient's mouth and get the patient to rinse her mouth well out with water.
 (f) If in *any doubt*, call the medical officer.
 N.B.—Remember the tablets must not be chewed or sucked; they must be placed between the upper gum (either side) and the cheek, and allowed to dissolve on their own.

gained from the use of buccal oxytocin one must be prepared to go up to larger doses. At the same time the dose schedule must be elastic, with the dose dictated by the result, and on this basis many patients will receive only a small-dose course.

The change from one hour to three hours as the waiting period before beginning oxytocin is a definite advantage resulting in 13% of our patients requiring no oxytocin at all.

From discussion and correspondence it is apparent that many obstetricians are not happy about the use of larger doses of buccal oxytocin. We believe the dangers have been exaggerated, though certainly there is no place for its use other than in an institution with proper supervision. If the obstetrician is not to provide continuous supervision in person then very clear instructions must be left for the midwife with regard to dose adjustment to response, the signs of excess dosage, and the action to be taken if those signs appear. We would most strongly recommend the use of a buccal oxytocin chart for each patient, with an easily assimilable record of progress together with the foetal and maternal condition. The inclusion of a set of instruction notes as a part of every record chart is a real safety factor, and the wording should be such that the midwives tend to err on the side of safety. We have slightly altered the chart shown in our previous article and the amended version is shown in the present Chart. This incorporates the three-hour waiting period and an amended dose schedule, equal in maximum amount to the successful series II but altered to give a greater emphasis to the lower doses. Also the record is continued for an hour after the last possible dose to cover the period in which that dose could be active.

By crossing out the first three hours this same chart can be used for cases receiving buccal oxytocin other than after amniotomy. If the dose schedule is not thought suitable for a particular case, it is a simple matter for the doctor prescribing the buccal oxytocin to overprint the figures on the chart with some other dosage.

Summary

The results are presented of further work with buccal oxytocin after amniotomy. This work was aimed at deciding the minimum effective dose schedule suitable for routine use.

A three-hour delay before beginning medication was found to be worth while in that 13% of patients avoided the need for any medication.

A reduction in the dose schedule was accompanied by a falling off in results.

Our buccal oxytocin record chart is described and the advantages of such a chart are discussed, particularly with regard to safety.

REFERENCE

Ritchie, J. M., and Brudenell, J. M. (1966). *Brit. med. J.*, 1, 581.