

RELIABILITY OF THE OXYTOCIN CHALLENGE TEST IN THE MANAGEMENT OF HIGH-RISK PREGNANCY

by

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Introduction

The evaluation of fetal condition at any stage of pregnancy, particularly under the conditions imposed by the stress of labour continues to be an obstetric enigma. The inaccessibility of the fetus limits the parameters available for direct observation. The uteroplacental-fetal unit has sufficient oxygen reserve to withstand the stresses of average labour. In high-risk pregnancies where the reserve is diminished or absent, uterine blood flow reduction from average labour may be sufficient to compromise the fetus.

The present study was undertaken with the above factors in mind, to assess how far oxytocin challenge test could prove reliable in the management of high-risk pregnancies in absence of sophisticated aids.

Material and Method

The study was performed on 72 patients at or after 36 weeks of gestation belonging to high-risk pregnancy. The patients were placed in semi-Fowler position of 30° and baseline fetal heart sounds were recorded over a period of 10 minutes. The count

and regularity were noted and any discrepancy observed was recorded. A 5% dextrose infusion was started and to 500 ml dextrose was added 0.5 I.U. of syntocinon and given at 120 drops per minute. Every 10 minutes 0.5 I.U. of syntocinon was added to the drip till the patient developed contractions of 60 to 90 seconds each every 3 to 4 minutes, within a period of 10 minutes. The fetal heart was continuously monitored with the fetoscope or stethoscope and results recorded as following in 3 consecutive contractions:

Negative: when no deceleration of fetal heart sound occurred or the fetal heart sound returned to the baseline soon after the deceleration.

Positive: when repeated (three or more consecutive) late decelerations of fetal heart sound occurred with contractions or the deceleration persisted.

Uninterpretable: when the deceleration of the fetal heart sound occurred, but was not repeated or persistent.

Discussion

The oxytocin challenge test was carried out on 72 cases at gestation of 36 weeks or after. As seen in Table I, there were 52 negative and 20 positive tests. The number of negative tests increased with the rise in the period of gestation. This was statistically found to be significant at

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TABLE I
Relationship Between the Period of Gestation and the Oct.

Period of Gestation in weeks	Oxytocin Challenge Test (OCT)		
	Negative	Positive	Uninterpretable
36	5 (6.94)	6 (8.33)	—
38	19 (26.39)	6 (8.33)	—
40	28 (38.89)	8 (11.11)	—
Total	52 (72.22)	20 (27.77)	—

P < 0.05 Statistically significant.

P < 0.05. Christie and Cudmore (1974) also found that 6 of 7 OCT performed at 34 weeks gestation or earlier were positive compared to 5 of 35 performed after 34 weeks. They suggest caution in interpreting this response and found the value of negative test undisputed in providing reassurance for the immediate well-being of fetus. Weingold *et al* (1975) considered the application of OCT in pregnancy before 30 to 32 weeks, when the chances of extrauterine survival were less, as academic. But in their study it had a particular advantage in assessing chronic fetal distress when abnormally low urinary oestriol levels were difficult to interpret.

The relationship between OCT and fetal heart sound during labour and neonatal outcome was highly significant statistically at P < 0.01. As seen in Table II, there were 52 negative OCT, out of which 2 were false negative as they developed deceleration late in labour but the babies were born alive. There were 20 positive OCT, 18 of these developed deceleration during labour and labour in these cases had to be terminated early by instrumental delivery or caesarean section.

There were 2 false positive tests where no deceleration occurred during labour and the babies were born alive. Boyd *et al* (1974) performed oxytocin stress test on 41 patients. Thirty-five were tested within 1 week of delivery and 6 within 4 weeks of delivery. Five patients had positive tests and 2 of these developed late deceleration with commencement of labour and were delivered by caesarean section. One of them had congenital abnormalities and died in neonatal period, while the other was depressed at birth, but survived. The other 3 were delivered vaginally of healthy babies. Two babies of mothers with negative test died. They concluded that a positive test should not preclude a well supervised labour. Ewing *et al* (1974) performed OCT on 40 patients, Thirty-one had negative test with no late deceleration during labour or fetal distress. Eight with positive test developed late deceleration in labour and 6 of these were delivered by caesarean section and 2 were delivered vaginally. Of the

TABLE II
Relationship Between OCT, FHS During Labour and Neonatal Outcome

O C T	FHS during labour/Neonatal outcome		
	Deceleration	No change	Fetal distress
Negative	2 (False —ve) (2.78)	50 (69.44)	—
Positive	18 (25.0)	2 (False +ve) (2.78)	—
Uninterpretable	—	—	—
Total	20 (27.78)	52 (72.22)	—

P < 0.01 Statistically highly significant.

latter 2, only 1 could be resuscitated. They found the negative OCT safe and could be followed weekly, but a positive test indicated an unfavourable environment and so advocated caesarean section in these cases. In their view OCT is a simple test of placental function in absence of other tests. Sinha *et al* (1979) performed OCT on 60 patients and found a good correlation between the positive OCT and fetal distress in labour and low apgar scores. So they found it useful in mangement of patients at risk of placental insufficiency and the negative test avoided unnecessary inductions. No relation-

ship was found between OCT and type of delivery as seen in Table III. This was because factors other than OCT were considered on deciding the type of delivery.

There was a close relationship between the OCT and the Apgar scores, as seen in Table IV. The mean Apgar score with negative OCT was 9.8 and with positive OCT 8.6 This correlation was also observed by Ewing *et al* (1974), Shifrin *et al* (1975) and Sinha *et al* (1979).

Conclusion

This study has shown that OCT is a fairly reliable test for assessing the utero-placental-fetal unit. In high-risk pregnancies where the reserves may be diminished or absent, the fetus may be compromised especially during the stress of labour. In these cases the OCT proves useful in deciding the management of high-risk pregnancy in association with clinical assessment and along with the other tests may prove invaluable. In case of negative test, the patient may be allowed to go into spontaneous labour, but in case of positive test the pregnancy should be terminated by caesarean section or the labour should be very closely supervised and on the slightest indication suitable method of delivery should be undertaken.

TABLE III
Relationship Between the OCT and the Type of Delivery

OCT	Type of delivery		
	Normal	Instru- mental	Caesa- rean section
Negative	37 (51.39)	5 (6.94)	10 (13.89)
Positive	11 (15.28)	2 (2.78)	7 (9.72)
Uninter- pretable	—	—	—
Total	48 (66.67)	7 (9.72)	17 (23.61)

P < 0.05 Statistically insignificant.

TABLE IV
Relationship Between the OCT and the Apgar Score

OCT	Apgar Score										
	0	1	2	3	4	5	6	7	8	9	10
Negative	—	—	—	—	—	1	1	—	—	—	50
Positive	1	—	—	1	—	—	1	1	2	1	13
Uninterpretable	—	—	—	—	—	—	—	—	—	—	—
Total	1	—	—	1	—	1	2	1	2	1	63

Mean Apgar Score for Negative OCT = 9.8.

Mean Apgar Score for Positive OCT = 8.6.

Summary

Oxytocin Challenge test was performed on 72 patients with a good correlation between the test and the neonatal outcome. It is particularly useful in cases of high-risk pregnancy where the uteroplacental-fetal unit may be affected, thus compromising the fetus.

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