

A STUDY OF THE 140 CASES DELIVERED BY VENTOUSE

by

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Vaginal delivery is the natural and most desirable method, so long as the process does not affect either the baby or the mother. Hence, to achieve that, designing an obstetric forceps with its various modifications was a great achievement in the history of operative obstetrics. With increasing experience, forceps application and forceps delivery was found undesirable under certain circumstances of labour. An addition of oxytocic drip to stimulate uterine contractions in these situations, was a further helpful progress of scientific achievement to deal ideally with those unfavourable situations for forceps application and completion of labour. The idea of further progress in the introduction of a new method which can serve the purpose of both-obstetric forceps and Pitocin drip, ended in the modification of Yonge's cupping glass extractor, i.e. Ventouse by Malmstrom in 1956. The modified instrument being more physiological, has been found suitable on many occasions where forceps extraction or increasing uterine contractions with oxytocic drips were associated with threatened risk to the mother and on many occasions to the foetus too. The ventouse has reduced the incidence of Caesarean section in many obstetric

centres of the world where the instrument is routinely used whenever indicated. The vacuum extractor has opened up new possibilities in the management of delay in the first stage of labour and in cases of mal-rotation of the occiput and has enabled the enthusiasts to deal safely and effectively with many obstetric problems requiring assisted delivery.

Since 1957, when Malmstrom described his modified instrument, ever increasing experience with the instrument is being published by enthusiasts in various journals. During the period of the last two years, the ventouse has been used in 140 cases for various indications in this hospital. The result of these cases will be discussed here.

By describing the ventouse as a physiological instrument, it is intended to convey that this closely resembles a normal vaginal delivery. Although it is an instrumental delivery, its effect on the mother and the baby is equal to that of a normal delivery, if not superior, as regards its effect on the mother.

The Instrument and the Technique

The modified instrument as designed by Malmstrom was used and a vacuum of up to 0.8 kg/cm has been created in all cases. In no case, a vacuum of less than 0.8 kg/cm was tried. The minimum time taken to produce the vacuum was 1 minute,

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the maximum was 10 minutes. The average time as calculated from the records was found to be 5 minutes. The range of total time taken from application to extraction of head was 4 to 30 minutes and the average was 7.5 minutes. Chalmers (1967) has reported 4 minutes as the minimum time for the production of the "Chignon" with the electric pump and he found it satisfactory. His average time for "Chignon" was 6 minutes. In cases of premature babies the negative pressure should be created very gradually and more time should be spent on it than in case of mature babies. This is because in premature babies, effective "Chignon" formation takes more time than mature babies, for the simple reason that the premature baby's scalp is not as loose and elastic as in mature babies. This is true also, in twin babies. In the present series the average time shown to produce "Chignon" was less than that of Chalmers and it was highly satisfactory in the sense that effective "Chignon" was formed and after birth, the baby was not affected, except in one case discussed in the result. Obviously, most cases in the present series had the head in low mid and low forcep level when the vacuum extractor was applied.

While traction was given with the right hand, the left hand was always utilised to slip the cervical rim over the foetal head and to help rotation of the head by giving tangential pressure on the sinciput. This has been found essential and a very helpful method in the extraction of the head where it is unrotated and in such cases the vacuum extractor is an ideal instrument.

In applying the ventouse the station of the head is a more important factor than the position of the occiput for its successful outcome. This has been found to be an essential point which needs correct determination before application of the forceps. In the present series, slipping of the cup has been recorded and this has been attributed to two factors—(a) high position of head (high forceps level)—which is a contraindication for forceps application and this also seems a valid contraindication for ventouse application, (b) Axis of the pull makes an acute angle with the cup. To avoid the latter factor—the high ventous application has been given up for further descent of the head or caesarean section and the other alternative is to do a liberal episiotomy. Liberal episiotomy has been found very helpful in delivering the head with ventouse. The cervix should be preferably thin, and also stretchable. In cases where the head is well within the pelvis and the cervix is thick, as in cases of prolapse, and where labour has lasted some time, cervicotomy has been found very suitable. In the present series, five cases of labour associated with genital prolapse have been delivered by the ventouse.

Last, but most important, is the checking of instrumental perfection before starting the application. In the present series—in one case caesarean section had to be resorted to after stitching up the episiotomy wound because the instrument was found defective and negative pressure could not be produced.

Indications

The present series comprises of 140 ventouse applications. In 76% of

cases the indications were uterine inertia associated with maternal distress, prolongation of the first or the second stages of labour, malposition of occiput, post dated pregnancy, twins, foetal distress etc. Abnormal uterine action comprises 10% of the indications and in these cases—cervical oedema, fibroid uterus and in some cases, genital prolapse were the findings. It is interesting to note that although the cervix was thick in these cases of genital prolapse, the foetal head was inside the pelvis and in order to apply the medium size cup to the foetal scalp, the cervix had to be cut in four out of five cases. Delivery was very smooth and no extension of cervical cut was recorded. Gentle traction on the traction rod was scrupulously followed in these cases.

Prophylactic ventouse and trial ventouse was applied in 12% of the cases which comprised—toxaemia of pregnancy, post caesarean pregnancy antepartum haemorrhage, prematurity etc. The rest of the cases (2%) comprised—conversion of brow to occipito anterior, outlet contraction, elderly primiparae. The present series comprises of 78% primigravida and 22% multigravidas.

As can be seen from the table, 79.3% of the cases had the head in the low-mid position and below and in about 91% of them, the baby could be delivered with ventouse but in 9% of the cases help with forceps was required. In 20.7% of the cases head was in the high mid cavity and high forceps level and in about 34% of them the ventouse failed to deliver the baby and forceps was required in 7 cases and caesarean section was done in 3 cases. Of these 3 cases, two had a trial ventouse and in one, due to technical fault of the instrument, caesarean section had to be done.

The position of the head was unrotated in 80% of the cases and in 3 of these cases, the head was delivered face to pubis. Slipping of the ventouse was recorded in 42 cases and re-application was necessary, thrice in 12 and twice in 28 cases, and in two cases of trial ventouse caesarean section was done after it slipped once. The babies were not affected by the slipping of the ventouse and in all those which were delivered vaginally, the babies cried as soon as the head was out of the vulva.

In all cases local infiltration anaesthesia with 1% Xylocaine solution

Station of head and outcome of ventouse

Station of Head	Total No. of cases	Delivery with Ventouse only	Ventouse followed by forceps delivery	Ventouse end with Caesarean section
Low cavity and outlet station	48	44	4	—
Low mid cavity station	63	57	6	—
High mid cavity and high station	29	19	7	3

was employed except in 2 cases where trial ventouse was done under general anaesthesia, both of which required Caesarean section.

Maternal and foetal outcome

Maternal and foetal outcome are very encouraging and the ventouse seems a very suitable instrument for achieving vaginal delivery where indicated. Except for extension of the episiotomy wound upwards, but not up to the vaginal vault in 5 cases, no other maternal complications were recorded.

The minimum and maximum birth weights of the babies were 3 lb. 8 ozs. and 8 lb. 12 ozs. respectively.

In 77% of the ventouse delivered babies, Apgar Scoring was 9-10 and in 20% of cases, the scoring was 7-8 and the babies cried after clearing of the air passages and oxygen inhalation. In the remaining 4 cases the babies were badly asphyxiated and only one of them could be revived. In one case the baby was delivered after craniotomy. This case was wrongly selected for ventouse delivery. In this case the foetal head was high and the cervix 2 fingers loose. The ventouse slipped thrice and the Obstetrician applied forceps which also failed due to malrotation of head. Foetal heart sounds were absent by this time and a craniotomy had to be done. In the other two cases, the babies were post-dated by 2 weeks. In one case, the foetal heart sounds were doubtful and the baby was delivered with forceps after failure with ventouse. In the other case, delivery of the head was very easy but the baby was badly asphyxiated and could not be revived.

Of the three foetal deaths analy-

sed, in one case only could the stillbirth be attributed to the ventouse. In the other cases where forceps were also applied, the stillbirth may equally be attributed to the forceps application on an unrotated head, producing intra-cranial injury and death. Therefore, the corrected foetal loss is one in the present series.

Failed ventouse

When judiciously applied, the ventouse should never fail in dilating a cervix, rotating the head and extracting the baby within safe limits. Errors in judgement in selecting cases is the main cause of failure of the ventouse.

When a baby is delivered with the ventouse, irrespective of the number of slips, it is considered as a successful ventouse. Like trial forceps, trial ventouse should not be considered as failed ventouse. Whenever a primary ventouse attempt fails and the delivery of the baby is aided, either by forceps or by caesarean section, it should be considered as a failure.

In the present series, the incidence of failure is 14.3%. Chalmers (1967) reported that they had a 12% failure rate in their first 100 cases and by their increasing experience, it has been reduced to 5%. Sankari and Snehalata (1964) had a 10% failure rate. De Vieller *et al* (1963) and Lasbrey *et al* (1964) reported a failure rate of 7.5% and 9.9% respectively. The high percentage of failure rate in the present series can be explained on the grounds that in 20.7% of the cases, the ventouse was applied in the high mid cavity and high station level. This group accounts for 50% of the total failure of ventouse applications and again,

in modern obstetrics, pulling a head down from such a high level of the pelvis, is an absolute contraindication for vaginal delivery and this should be given up for the safe Caesarean section.

Discussion

Under identical conditions where the ventouse or forceps are both applicable, the ventouse is superior to the forceps. The ventouse does not occupy any space in the pelvis and, therefore, no compression of the foetal head occurs. The ventouse pulls on the scalp of the foetus and the compression of the foetal head, due to scalp traction, has been calculated to be 1/20th of 3/8ths. of an inch of usual compression during forceps application (Rosa—1955, Chalmers and Fothergill—1960).

The rotatory movement of the foetal head is a spontaneous one. It is not an active function of the ventouse. As a result the head rotates spontaneously on the side which is determined by the pelvic architecture. In this respect the ventouse is physiological to the foetal head and is a point of great safety to the foetus as this spontaneous movement is devoid of any unwanted compression of foetal head with hazardous results. Considering the three factors, therefore—foetal head can fully avail itself of the pelvic space, the spontaneous rotation of the foetal head in the suitable direction and the amount of compression of the foetal head which is 1/20th of forceps compression with ventouse, it is justifiable to state that the ventouse is physiological and a safer instrument to the foetus.

The original idea of Malmstrom (1957) was to stimulate uterine con-

traction in cases of hypotonic inertia with the help of ventouse traction and producing pressure on the cervix by the foetal head. The idea is always maintained whenever the head is extracted and more important than this, is stretchability of the cervix. If the cervix is not stretchable, then the ventouse will fail to extract the head unless cervicotomy is done. Therefore, whenever a head is pulled through a stretchable cervix, there is circumferential stretching rather than pulling down of the cervix. Hence the question of overstretching of the cervix and its ligamentary supports does not arise.

It is a point of great advantage with the ventouse that the duration of the second stage is reduced; often it may be as short as a few minutes. This is helped by a deliberate episiotomy when the perineum has not been overstretched. This factor will surely prevent cystocele and rectocele which are common sequelae of forceps delivery or normal delivery. Moreover, with forceps delivery the lacerations of the vagina and extension of episiotomy wound either to the vault or to the anus, are quite common. These complications were not recorded in the present series and also in the reported results of many authorities. The ventouse has also overcome the dangerous complications of manual rotation.

Considering the above factors—forcible dilatation of the rigid cervix is not possible, minimum duration of second stage of labour, no overstretching of ligamentary supports, ventouse is physiological to the mother. So it is an ideal instrument when compared with other instruments applicable to the same mater-

nal condition. The question of cervical incompetence, genital prolapse, is not likely to arise when this instrument is used judiciously.

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