

Delivery of the Head with the Malmström Vacuum Extractor During Cesarean Section

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THE MALMSTRÖM VACUUM EXTRACTOR has been widely used in Europe during the past 10 years and in the United States for approximately 2 years. Reports from both hemispheres have described the indications, methods, and results in vaginal deliveries. However, its use for the delivery of the head during cesarean section has not been described, although Malmström has personally told the author that he has successfully used it for this type of delivery.

This article is based on experience in 20 cesarean sections in which the Malmström vacuum extractor was used for the delivery of the head.

The advantages of this method would seem to be: (1) the chance of uncontrolled extension of the uterine wound is reduced because neither the hand nor the forceps is used, permitting use of a smaller incision—one just large enough for the delivery of the fetal head;¹⁻⁵ (2) bleeding from the cut surfaces of the uterine incision is controlled by the uniform pressure of the head when traction is exerted; (3) delivery is brought about slowly and carefully, with minimal injury to the fetal head.

METHOD

A small transverse incision is made in the lower uterine segment of the uterus and the membranes are ruptured. Of the 4 cup sizes available—30, 50, and 60 mm.—the 50-mm. size is preferable as it offers a firmer

attachment to the scalp than the smaller sizes; the 60-mm. size is too large.

The essential difference between a vaginal and an abdominal delivery with the Malmström vacuum extractor lies in the time which elapses from the time of application of the cup to the development of maximum suction and delivery of the head. In vaginal delivery, a negative pressure is built up to 0.7 or 0.8 kg./sq. cm. of surface over a period of 6–8 min. before traction is started; at cesarean section traction is begun as soon as the cup is applied to the head. In order that the cup may become attached immediately, it is essential to build up the necessary negative pressure within the vacuum bottle beforehand. The slow building up of pressure is not necessary with cesarean section as the resistance offered by the edges of the uterine wound is much less than that from the pelvic floor. Applying a clamp to the rubber tubing connecting the bottle with the cup allows the pressure to be built up and held. When the cup is applied to the head, the clamp is removed, the suction is immediately available, and the cup becomes attached to the head.

The amount of caput succedaneum is much less with this sudden application and, therefore, the strength of the attachment is not as great as when the negative pressure is built up slowly. Even if the cup does come off the scalp during traction, it can be replaced easily and rapidly. The clamp is then reapplied to the tubing connecting the vacuum bottle with the cup, and the pressure is quickly brought back to that required. The cup is replaced as before and delivery of the head is accomplished. If the head is floating in the occipito-anterior position, the pro-

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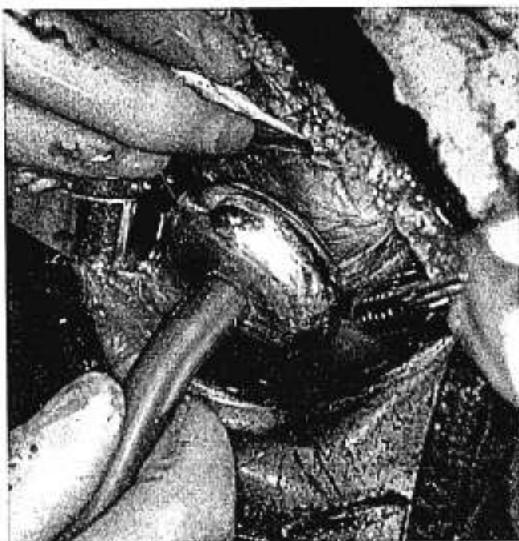


Fig. 1. Application of the cup of the vacuum extractor to the head through the incision.



Fig. 3. The head being delivered through the lower uterine incision.

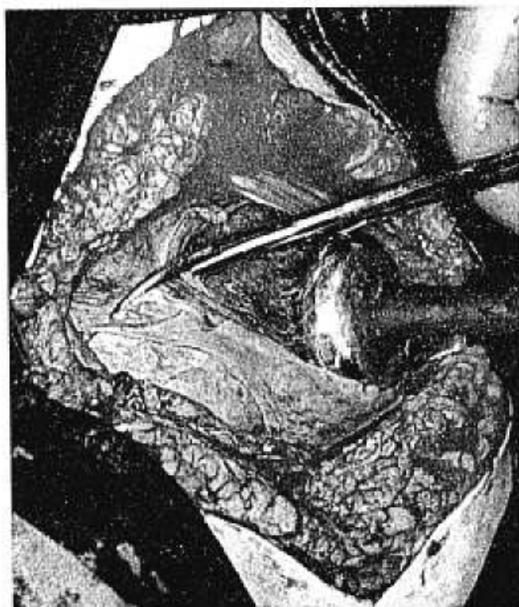


Fig. 2. Traction being exerted with the extractor and the uterine incision being extended.

cedure is carried out very easily. When the head is occipito-posterior or wedged in the brim of the pelvis, it may be necessary to elevate it with either a hand or a forceps blade. After this has been accomplished the

vacuum extractor may be used as in the ordinary case. The cup is most effective when applied to the vertex or posterior portion of the scalp but it may also be used in more anterior locations. When the head is being delivered with the extractor, gentle pressure on the fundus of the uterus is permissible and helpful.

RESULTS

During 20 cesarean sections the head has been successfully delivered by the Malmström vacuum extractor. With the technic described, there was no undue delay in delivery although the cup came off in about 25 per cent of cases and had to be reapplied. There were no untoward effects from the second application. All babies were in good condition at delivery and discharged with their mothers from hospital. The caput succedaneum has been much less with cesarean section because delivery has been produced more quickly, less traction applied, and the cup has been attached to the scalp for only a few minutes. There were no marks of any kind on the scalp 48 hours after delivery in comparison with vaginal delivery, where

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approximately 20 per cent of the scalps show some evidence of the extractor on the fifth postpartum day.

CONCLUSION

The Malmström vacuum extractor is a satisfactory method of delivering the head during cesarean section and would appear to have certain advantages over conventional methods.

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