Establishment the number you have vaccinated from each supply, and with what result.

Pray have the kindness to attend to the above request.

(Signed) C.H.

Surgeons are advised to employ recent liquid Vaccine Lymph, whenever it is in their power; and with this view, to vaccinate their patients in succession, for the purpose of keeping up a supply.

Letters of application for Lymph, and communications respecting Vaccination, are to be addressed *unsealed*:

"To Dr. HUE, Registrar of the N.V.E., Russell Place, Fitzroy Square."

To the Clerk in Waiting,
Privy Council Office,
London.

National Vaccine
Establishment.

As inoculation of the small-pox is altogether unjustified, the Board have resolved, that if any Vaccinator of this Establishment shall so inoculate, his name be erased from the List.

** It is proper that it should be known, that Persons exposing patients affected with the small-pox, and Medical Practitioners and others who inoculate that disease and concur in such exposure, are liable to a criminal prosecution for the offence.*

*See the cases of *The King v. Sophia Vantandille*, 4th Maule and Selwyn's Reports, p. 73; *The King v. Burnett*, 4th Maule and Selwyn, p. 292;—and see the Judgment of Lord Denman, Chief Justice in the *Queen v. Squires*, tried at the Dorchester Assizes, March, 1849, on passing sentence on the prisoner, who had been convicted of manslaughter, for inoculating the deceased with smallpox: "He hoped it would be made generally public, that if a party ventured to inoculate another, he was not only liable to imprisonment under the statute, but in case death ensued he was liable to be indicted for the crime of manslaughter." *Times' Newspaper*, 19th March, 1849.

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PARACERVICAL NERVE BLOCK

A SIMPLE METHOD OF PAIN RELIEF IN LABOUR

BY

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The use of regional anaesthesia to relieve pain in the first stage of labour has generally been restricted to caudal and lumbar epidural anaesthesia. Excellent though these methods may be, technical difficulties detract from certain success in every case. A much simpler and more direct means of interrupting pain sensation from the uterus is to inject the anaesthetic solution into the loose cellular tissue at the side of the cervix. It may seem surprising that this obvious method of paracervical nerve block has not hitherto been more fully exploited. There are two reasons. One is the difficulty of exposing the lateral vaginal fornix during the course of labour. The other is the seeming impossibility of inserting a needle—which of necessity is long and pliable—in the correct anatomical position without injuring the foetus or damaging the uterine vessels and ureter.

Similar, if lesser, difficulties were foreseen when the transvaginal method of performing pudendal-nerve block was first advocated. These were overcome by devising a bulbous-ended guard-tube which could be manipulated into the desired position, and through which the injecting needle could be safely directed to

its correct anatomical location. With this success, it was natural to turn again to the method of paracervical nerve block which, until that time, had been a theoretical concept rather than a practical procedure. The essential requirement was a rigid tube which could be manipulated by touch into the lateral vaginal fornix and through which a needle of a precise length could be introduced and made to penetrate no more than a few millimetres into the tissues of the broad ligament. Such a device was described by Freeman *et al.* (1956) and by Davis *et al.* (1962). Our work has followed a similar line.

Anatomical Basis.—Autonomic nerve fibres from the uterus form an ill-defined plexus lying in the pelvic cellular tissue at the base of the broad ligament, only a short distance from the lateral vaginal fornix. Pain sensation is carried in these autonomic fibres, which traverse the plexus and, via the "presacral nerves," reach the lumbar and thoracic roots of the spinal cord.

Technique

A specially constructed guard-tube and needle is required. The essential feature is found in the injecting

needle, which when inserted into the guiding-tube protrudes no more than 7 mm. (see Diagram). The guard-tube we have previously used is 12 cm. in length,

Needle used for paracervical nerve block, showing method of introduction.

but this could with advantage be increased to 14 cm. A Luer fitting to the needle hub is desirable but not essential.*

A 20-ml. syringe is filled with anaesthetic solution and the needle attached before the vaginal examination is begun. The anaesthetic chiefly employed has been lignocaine 1%, with adrenaline at a strength of 1:200,000.

The patient is placed in the dorsal position or, alternatively, the left lateral position (the lithotomy position may be used but is unnecessary). After the customary examination the edge of the cervix is identified and the vaginal vault cleansed with a cotton-wool swab soaked in chlorhexidine solution. The guard-tube is now introduced into the vagina and pressed firmly into the lateral fornix by the two examining fingers. The needle is passed through the guard and, maintaining the slight upward and lateral pressure in the fornix, is made to penetrate the vaginal wall at this point. After preliminary aspiration to ensure that a vessel has not been punctured, the local anaesthetic solution is injected. The needle is then partly withdrawn and the guide transferred to the opposite fornix; it is unnecessary to remove the guide or the examining fingers from the vagina. The procedure is then repeated on the opposite side—that is, 10-ml. injection each side.

The injections are given at approximately the 3 o'clock and 9 o'clock positions with regard to the cervix; but the exact site is not critical, and some workers (Aldridge *et al.*, 1961) prefer to make the injection into the utero-sacral regions at the 4 o'clock and 8 o'clock positions. Sedoff (quoted by Freeman, 1961) has shown that a radio-opaque solution injected through the fornix spreads widely through the extraperitoneal connective tissue at the base of the broad ligament. In a similar study Kobak *et al.* (1962) demonstrated that there is little difference between injections that are strictly paracervical and those that are utero-sacral in position.

Pain relief occurs almost at once, and the effectiveness of the injection can be judged by digital stretching of the cervix, which, normally a painful procedure, now produces no sensation. Vaginal examination also becomes much easier. Indeed, this now causes so little

discomfort that it is our practice to defer detailed examination until this stage.

Duration of Effect

The relief from pain lasts from one to two hours. This time limit is a disadvantage, but it is quite possible to repeat the injections, and this we have done on a number of occasions. There seems to be no reason why injections beyond two in number might not be made in suitable circumstances.

Other anaesthetic agents, cinchocaine, amethocaine hydrochloride, lignocaine with "dextraven" (Loder, 1960), have been tried in the hope that the anaesthesia would be more prolonged. We have not noted any remarkable improvement in effect.

Indications

Paracervical nerve block has proved to be of considerable value in the patient who is greatly distressed by labour pains. Once the block has been established—and this in itself is not difficult—the patient relaxes and any necessary examination then becomes easy. The following case may be cited as an example.

A married woman, an "unbooked" patient, was admitted to hospital in labour. Nothing was known of her history, and she was so restless and distressed that a satisfactory examination was impossible, although the cervix was judged to be about three-quarters dilated. A paracervical block was performed. Within five minutes she was completely free of pain, quiet, and co-operative, enabling a full history to be taken and an adequate general examination to be made.

Although the method may be used at any time in the first stage of labour, it gives best results towards the end of this stage. If the injections are given too early the initial beneficial effect gradually wears off and the patient, having experienced complete relief of pain, now seems to find subsequent contractions particularly distressing. Further paracervical injections or other forms of sedation are therefore soon required.

Like caudal and spinal anaesthesia, paracervical nerve block abolishes any desire to "bear down." This may, in fact, be an advantage, especially with excitable patients, who often tend to bear down, in spite of instructions, before the dilatation of the cervix is complete.

Once the cervix is fully dilated and the foetal head has begun to descend, the technique of paracervical injection is less easy and the results are less certain; but at this stage other methods of anaesthesia, such as pudendal-nerve block, come into their own.

Effect on Uterine Action

There is no significant change in the uterine contractions. These can still be palpated although they are mostly painless. We have carried out studies using the tocograph (Embrey, 1958) connected with an internal recording-bag, and have confirmed that there is no consistent change. It has been suggested (Page *et al.*, 1961) that paracervical block aids dilatation of the cervix. This may well be so; but we cannot claim from our own observations that dilatation of the cervix is either hindered or helped by this method of anaesthesia.

Results

One hundred cases of paracervical block were performed on 94 women in labour. To the observer it

*A suitable needle is now supplied by Messrs. Thackray, of Leeds.

was obvious that very substantial relief of pain was obtained in most cases. Each patient was also carefully questioned, but, in order that the results could be judged with the least possible bias, no comment was made to the patient at the time of the injection, save to explain that an examination was to be made. Ten minutes after the injection the result was assessed by asking the patient, "How are the pains?" without giving any suggestion of expected relief. When recorded and analysed the answers indicated "complete" or "very good" relief of pain in 71%, "partial relief" in 25%, and "no relief" in 4%.

These results may be compared with those of other workers, which for this purpose are expressed under similar headings, and on a percentage basis to the nearest unit.

	Freeman <i>et al.</i>	Davis <i>et al.</i>	Aldridge <i>et al.</i>	Present Series
Complete or very good relief	86	90	76	71
Partial relief	4	—	19	25
No relief	10	—	5	4

Contraindications.—The possibility of sensitivity of the patient to the local anaesthetic agent used must be kept in mind. We have not encountered this trouble in our series, but it is obvious that the initial injection should be made slowly and with the patient kept under careful supervision.

Side-effects

In one case we noted a temporary foetal bradycardia after the injection; in another case, an early one of the series, the following undesirable effect was observed—presumably the result of an inadvertent intravenous injection of the anaesthetic agent, which is a hazard common to all methods of local anaesthesia.

The patient was well established in labour but was experiencing a great deal of pain. A paracervical injection was satisfactorily given on the left side. When, however, the needle was transferred to the right side some blood was drawn into the barrel of the syringe. The needle was then reinserted, but after the injection of a few millilitres of solution the patient became for a few minutes pale, dyspnoeic, and distressed. Incidentally, there was another interesting feature in this case. Only the left side had been satisfactorily injected; the patient later declared, quite spontaneously, that labour pains had completely disappeared from that side, but not from the other side of the body.

Apart from the complication referred to above we have had no significant trouble attributable to the procedure. In other recent reports the following untoward effects have been recorded, which, however, seem to be attributable to errors in method or technique.

Freeman *et al.* (1956) recorded foetal bradycardia in 2 or 3% of their series. They also recorded one foetal death due to maternal collapse; this was consequent upon the injection of 45 ml. of 1% "cyclaine" local anaesthetic—a dose which seems needlessly large, especially if the adrenaline was omitted and rapid absorption thus favoured. Injection of a nerve root was recorded by the same author. In this case pain and weakness occurred for three months before complete recovery took place. The drug used was efocaine, which is now recognized to carry a danger of causing prolonged neuritis, and which for that reason is seldom now employed.

Summary

A simple method of nerve block is described by which pain in the first stage of labour may be relieved for a period of one to two hours.

The results in a series of 100 administrations are described. Complete or almost complete relief of pain was obtained in 71% of cases, and partial relief in a further 25%.

Paracervical block is of considerable use towards the end of the first stage of labour, not only because it relieves the patient of her suffering but also because it enables the obstetrician to make an adequate examination with much greater ease and precision.

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AUTOIMMUNE PHENOMENA IN PERNICIOUS ANAEMIA

SEROLOGICAL OVERLAP WITH THYROIDITIS, THYROTOXICOSIS, AND SYSTEMIC LUPUS ERYTHEMATOSUS

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Attention has recently been drawn to the significant association of thyroid diseases with pernicious anaemia. Tudhope and Wilson (1960) found that nearly 10% of patients with myxoedema had pernicious anaemia, and in a later study (Tudhope and Wilson, 1962) an even higher proportion were shown to have impaired absorption of cyanocobalamin due to a deficiency of intrinsic factor. McNicol (1961) found that 5% of patients with pernicious anaemia were or became thyrotoxic, the majority developing overt thyroid disease at varying periods after diagnosis and treatment of the anaemia. Further support for such a relationship is provided by the finding of an increased incidence of thyroiditis in patients with pernicious anaemia examined at necropsy (Bastenie, 1937; Williams and Doniach, 1962).

There is little doubt that thyroid autoimmunity is strongly implicated in myxoedema and to a less extent in thyrotoxicosis, while recent work has demonstrated autoimmune phenomena in pernicious anaemia (Taylor, 1959; Schwartz, 1960; Jeffries *et al.*, 1962; Irvine *et al.*, 1962; Taylor *et al.*, 1962). It is possible that the

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