THE SIGNIFICANCE OF THE POSITION OF A "CONTRACTION RING"

IN CASES OF EXTREME PELVIC CONTRACTION WITH
VERTEX PRESENTATION.

BY

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A RING of contracted uterine musculature is liable to form in the region of the junction of the upper and lower uterine segments in delayed labour.

One of the commonest conditions in which delay occurs is contracted pelvis. When, in addition to a marked degree of pelvic contraction, the fetus presents by the vertex, the site of this ring, in relation to the fetal parts, is of considerable importance, both from the point of view of etiology and of treatment.

In obstructed labour due to contracted pelvis with a vertex presentation it is at least doubtful if a true "retraction" (Bandl) ring can form before sufficient upper uterine segment retraction has occurred to elevate the site of the ring above the level of the fetal shoulders. But cases are occasionally seen in which the formation of a "ring" has become so marked before this stage, that it is found constricting the fetal neck more or less closely. The trunk and limbs of the fetus are then imprisoned above the ring in an unretracted, but often apparently tonically contracted, upper uterine segment. With a markedly contracted pelvis, the head, in these cases, is held in purchase between the ring above and the pelvic brim below.

The most recent view is that a "ring" forming in this position under these circumstances does not merit the name of "retraction ring" (Bandl), but is rather of the nature of a "contraction ring" due to local spasm of the uterine muscle (with or without contraction—but without definite marked retraction—of the upper uterine segment). In the opinion of the adherents of this view the chief cause of this spasm, before marked retraction has taken place, is over-irritation of the uterus by excessive manipulations in efforts to deliver.

Though opinion is not even now unanimous on this point, there is undoubtedly much to be said in its favour. Budin,¹ Cheron,² and Demelin,³ in 1898-9 (and more recently White⁴), have described a type of case in which such a ring occurs with apparently unretracted, and even flaccid, upper uterine segment. Berkeley, Russell, and Fairbairn⁵ speak of it as an established clinical entity. In Germany von Rosthorn⁶ and Bumm⁷ state that a "contraction" ring begins to be evident on the inner surface of the upper part of the lower uterine segment from the onset of uterine contractions in every labour—that is, before much retraction has occurred. On the other hand, Veit⁸ denies the occurrence of rings of this type (and Williams agrees with him). He says in effect that all such rings are true retraction rings, and that the views of Budin and others are the result of faulty observation.

Jardine⁹ (quoting four cases, apparently of this type) discusses the subject fully. He points out that retraction of the upper segment is always occurring *pari passu* with contraction. He speaks of the retraction (or Bandl's) ring varying in position with the degree of retraction which has occurred. But he speaks of it always as a retraction ring, wherever formed. In some of his quoted cases it is interesting to note that there was no obvious evidence—that is, no marked pelvic contraction—of obstructed labour.

Whatever the exact pathogenesis of the ring may be in these circumstances a very serious proposition is undoubtedly encountered when it develops in association with a markedly contracted pelvis.

I have had the opportunity of treating one case of this type and of observing the treatment of another. In both the conjugate diameter was so small that the indication was absolute for Caesarean section had the cases been seen at or before the onset of labour. There had, however, been much intrauterine manipulation in both during previous attempts to deliver. A ring in both cases tightly constricted the fetal neck (vertex presenting.) It appeared quite impossible that the head could be delivered upwards through the ring if Caesarean delivery were attempted. It appeared equally certain that, even were it possible to deliver the head *per vias naturales*, it would have

been quite unsafe to attempt extraction of the trunk through the narrow ring, however extensive the previous embryulcia.

In the case I treated personally the upper uterine segment showed some evidence of thickening above the ring as compared with the part below, the fetal trunk being somewhat difficult to palpate distinctly. The ring sulcus was quite marked on external palpation, and indeed to the eye.

In such cases an unusually difficult situation is presented, the fetal head being absolutely fixed and impacted between the "ring" above and the true brim below. By the time the case reaches this stage the fetus is usually dead, owing to the cutting off of the maternal blood supply—the result of tonic uterine contraction. An accessory factor in one of the quoted cases was an unreplaced prolapsed cord, which, with premature rupture of membranes (both cases), is a not unusual occurrence in marked degrees of pelvic contraction.

In considering treatment of this condition it must be remembered that, while the usual death of the fetus gives the widest latitude in choice of procedure, the patient is generally in rather bad shape physically. There is danger in extensive or prolonged manipulations both of general collapse and of uterine rupture. The type of interference involving the least shock, and that capable of being performed most rapidly, is that to be chosen. The lines of treatment calling for consideration are the following:

1. Craniotomy alone.
2. Craniotomy with embryulcia.
3. Caesarean section alone.
4. Caesarean section after craniotomy.
5. Caesarean section after craniotomy and decapitation.

Craniotomy alone will not help for obvious reasons.

Craniotomy with embryulcia, under deep chloroform-morphine anaesthesia, to relax the uterus (morphine gr. $\frac{1}{4}$ to $\frac{1}{2}$ given at least half an hour before operation), might allow of delivery *per vias naturales* in cases with less than the most severe degrees of pelvic narrowing. Under unfavourable conditions for better forms of treatment (for example, unsuitable rooms for operations) this line of treatment might be tried, but it should only be considered under such conditions and then only in conjugates of $2\frac{1}{2}$ in. or more.

It is not the best treatment because, apart from the danger of deep chloroform anaesthesia in such poor subjects—

- (a) Time may be lost in waiting and in the process of manipulations.
- (b) Necessary manipulations may possibly cause recurrence of spasm.
- (c) The danger of uterine rupture (now imminent) is great.
- (d) I have reason to believe, from personal observation (see below), that relaxation of the ring is not always attained to a useful extent.

Caesarean section without preliminary craniotomy will not in the vast majority of cases allow of delivery, as the "ring" will rarely allow of extraction of an uncrushed head.

The best choice for the patient lies between craniotomy followed by Caesarean section, and craniotomy *plus* decapitation and Caesarean section. Preliminary craniotomy should be done in any case. Decapitation will be difficult, and not without danger in such cases. It will prolong the interference, though no doubt it removes the possibility of trouble in subsequent upward withdrawal of the crushed head through the retraction ring during Caesarean section. The former method is the better, as in any case the neck could be more rapidly divided from above if necessary, and the head extracted later in the unlikely event of its not being deliverable upwards through the ring.

All cases of this type which have been "handled" to any extent (as many will have been before coming under observation) are so likely to become septic that it will often be safest to do Caesarean hysterectomy (or, if preferred, the Porro operation). If supravaginal hysterectomy be the operation chosen the peritoneum over the cervical stump should alone be sutured, the stump itself being left open to secure better drainage of the parametria.

In the unlikely event of the fetus being alive, an effort must be made to save it, even at added risk to the mother.

Under suitable conditions immediate abdominal Caesarean section, with rapid incision of the ring internally, would be the correct treatment. The site of incision being under immediate control, the choice of immediate suture or hysterectomy would then be guided by the probability of previous septic infection.

The following is the type case, the story of the other (particulars of which I am not at liberty to publish) being almost exactly similar.

Mrs. M., 29 years, primipara, was seen in consultation in a nursing home. The doctor reported the patient twenty-four hours in labour, and that membranes ruptured early; the os was fully dilated. The head was quite above brim, marked overlapping, but held down firmly on to brim and not movable to any extent. The cord was prolapsed and pulsation absent.

The marked retraction ring was very palpable and visible above fetal head but below the shoulders. Fetal parts could not easily be made out by palpation. Tonic, slightly tender upper uterine segment. Forceps had been applied several times without result. (Blunt-hook traction under chin had been tried for some time, and the hook was still in position when I first saw the case.) The temperature was 99°, and the pulse 100. Pelvic mensuration showed: Interspinous diameter, 10 in.; intercrural, 10 in.; diagonal conjugate, 2½ in. Markedly oblique rickety flat type of pelvis.

The indications were absolute for Caesarean section, but there had been much handling before I saw the case, and considerable laceration and oedema of the soft parts were present. It appeared certain that the patient must be extensively septic.

Operation.

I therefore hesitated to do abdominal Caesarean section at once and decided to give the patient another chance of delivery *per vaginam*. The head was first thoroughly broken up. Then, under deep chloroform-morphine anaesthesia (in the hope of relaxing the ring and thus of being able to get the shoulders past it and do an extensive embryotomia) steady traction of moderate force was tried for a short time. The ring showing no sign of relaxing, and the patient being in indifferent condition, it was decided to waste no more time, and abdominal Caesarean section was performed as quickly as possible. During the operation, though the anaesthesia was deep and the patient still under morphine, the fetal neck was still closely held in the ring, and the well-broken-up head was only extracted upwards through the ring with some difficulty. The ring did not appear very dilatable. The uterine wall appeared rather thicker than usual (not markedly so) during incision. Supravaginal hysterectomy was done. Both adnexa were left *in situ*.

Infection of an acute septicaemic type began on the third day of convalescence, and the patient had a stormy passage for three weeks, when the temperature subsided.

The patient was given *Streptococcus phylacogen* during the first week, and as this appeared to have no effect on the condition, she had two injections of a heterogeneous polyvalent streptococcal vaccine at intervals of a week. Continuous breast saline was given throughout.

I do not doubt that the removal of the uterus saved the patient from a still more violent sepsis and a worse fate.

In closing, it appears appropriate to point the moral that prevention is better than cure. A careful measurement of the most important diameters of the bony pelvis should be made in all primiparae, and in pluriparae with a history of previous difficulty in labour. Of more importance still is to note the position of the fetal head and its fit in the brim from ten to seven days before the expected date of labour. These should not nowadays be regarded as counsels of perfection. The necessary investigations are neither highly technical nor difficult, and are constantly practised by some practitioners (and they not the least busy). If they were carried out by all we should see far fewer of these "regrettable" cases than we do at present.

REFERENCES.

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By an Act dated October 20th, 1919, every Frenchwoman admitted to maternity benefit under the law will receive during the twelve months following delivery a supplementary allocation of 15 francs a month at the cost of the State. The allocation will be granted as long as the law relative to indemnity for the increased cost of living continues in force, on condition that the mother suckles her infant and takes proper hygienic care of herself and her child.

RHINOPLASTY AND CHEILOPLASTY.

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An intelligent apprentice engineer, aged 16, whose nasal cartilage and the skin over it had disappeared under the ulceration of lupus, and who had a patch of lupus still remaining, was taken under my care into the Liverpool Royal Infirmary, where I scraped away the small patch of disease on May 25th, 1887.

The result is shown in Fig. 1, where the upper lip is seen to be scarred, and so deficient as to leave his mouth almost permanently open. To remedy these defects I

FIG. 1.—Taken in August, 1887. Showing defect of nose and upper lip; also the lines of incision in the plastic operation.

FIG. 2.—Taken in November, 1890. Showing final state of new nose and augmented upper lip, twenty-seven years before blindness occurred.

performed rhinoplasty and cheiloplasty on April 27th, 1888, the lines of incision being marked in the illustration, photographed on August 27th, 1887. To enlarge the upper lip the scab left between the nose and upper lip was cut out; the lip itself was freed somewhat to permit its depression to meet the lower lip, and the skin dissected off the nasal bones while remaining attached at both cheek ends to provide vascular pedicles, and stitched to the raw edge of the upper lip, thus making that lip wide and substantial, as shown in Fig. 2. A flap for the new nose was taken from the forehead over the right eye, and having a curved pedicle on the left to permit the flap to be turned down to cover the exposed nasal bones and the rest of the raw surface. Much care was taken to fashion the alae and septum, which gave quite a presentable shape to the new nose on the day of operation.

But this attempt at an approach to elegance failed, as the distant corners of the flap sloughed. All other attachments healed well, and the raw surface on the forehead granulated up quickly. Much trouble was also spent in trying to keep open the nostrils by means of rubber tubes, but this also failed, and the nostrils became permanently closed.

This, however, proved not to be inconvenient, and I found that, as no nasal mucus accumulated, there must have been little or none formed beyond what could easily escape unobserved into the pharynx, the absence of draught and attendant dust apparently keeping the mucous membrane quiescent.

Though the nose and augmented lip never became elegant they answered their purpose, and are well shown in Fig. 2, photographed in November, 1890. This young man became a skilled engineer, and volunteered for foreign service at Chatham Dockyard in 1900, serving as a marine engineer in Bermuda, Nova Scotia, and Newfoundland.

He married in 1905, and lived for a time in the south of England, coming several times to see me when visiting his father in Liverpool.

In September, 1916, he was second engineer in a tug patrolling the North Sea. In July, 1917, I met him in Liverpool, led about by his wife on account of permanent blindness due to glaucoma which had not been remedied by operation in time to save his sight. For this he has since been taken care of in St. Dunstan's, Regent's Park, by which he is enabled to make a living for himself, wife, and family. He has perseveringly served his country, which took him in hand until able to shift for himself, which he does in a country poultry farm.