AN UNUSUAL CONSTRICTION RING OF THE UTERUS

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A constriction ring of the uterus was recently photographed at the King Edward VIII Hospital, Durban. As confusion usually arises when discussing retraction and constriction rings, it is advisable to outline both these conditions.

RETRACTION RING (OR BANDL’S RING)

The physiological retraction ring (or the physiological ring of Bandl) is present in every normal labour, situated at the junction of the upper and lower uterine segments. The ring lies about 2 finger-breadths above the upper border of the pubis. A retraction ring is not palpable.

The pathological retraction ring (or the pathological retraction ring of Bandl) is also present at the junction of the upper and lower uterine segments. It is only present in neglected obstructed labours in the second stage, where it is palpable in the umbilical region. The pathological retraction ring is therefore an exaggeration of the physiological retraction ring, only occurs in obstructed labours, and manifests itself by a gradual rising of the retraction ring to an abnormally high position where it becomes palpable. The pathological ring can be felt as a ring or furrow running obliquely across the abdomen at or near or even above the navel. The foetal heart is usually absent at this stage as the baby is often dead.

Constriction or Contraction Ring. This is a contraction of an area of circular muscle fibres occurring during any stage of labour, but usually in the second stage. In the third stage of labour it is often designated an ‘hour-glass’ contraction ring. This complication in the third stage sometimes follows the use of ergot and pituitary extracts—the uterus undergoes such an extreme degree of retraction that the placenta becomes imprisoned and the shape thus imparted to the uterus resembles an ‘hour-glass’ constriction.

A constriction ring may occur at any level inside the uterus, and usually encircles a small part of the foetus, e.g. the neck in vertex presentations. The usual sites affected are:

(a) The junction of the upper and lower segments;
(b) The internal os;
(c) The external os, i.e. it may develop below the foetus.

INCIDENCE

This is variable and probably depends upon whether lesser constriction rings are diagnosed or not. Louw reports 6 cases amongst 1,663 deliveries at the Peninsula Maternity Hospital in 1946. At King Edward VIII Hospital there are about 7,000 deliveries annually. During the past year I know of 2 cases in which the diagnosis was made. Probably milder cases have been missed as the intensity of the ring varies. However, the diagnosis here is rarely made.

CASE REPORT

History. The patient was a 5-gravida. The first, third and fourth pregnancies ended in full-term normal deliveries. The second pregnancy was terminated by classical caesarean section at a district hospital. The indication appears to have been a transverse lie.

The weights of the babies were not known, but the patient stated they were of an average size (approximately 7 lb.). With her present pregnancy the last normal menstrual period was in August 1950. She had been in labour for 24 hours and the membranes had ruptured immediately before my examination on 16 May 1951.

EXAMINATION

The patient’s general condition was satisfactory. The pulse rate was 100 beats per minute, blood pressure 130/80 mm. Hg. The patient was not anaemic and there was no oedema of the feet or sacrum. The urine contained no albumin. The respiratory and cardiovascular systems were normal.

Abdominal examination revealed a full-term pregnancy in the right occipito—posterior position. The presenting vertex was entering the brim but was still mobile. Uterine contractions were strong. The baby felt bigger than normal, and regular foetal heart sounds were heard at 140 beats per minute. On vaginal examination the cervix was 3½ fingers dilated, oedematous and poorly applied to the presenting vertex. The membranes were ruptured. The vertex, in the right occipito-posterior position, was 3 cm. above the ischial spines. Moulding was not present. The pelvic measurements by vaginal examination were:

Brim.
Antero-posterior diameter: 3½ inches.
Transverse brim felt contracted with the anterior ⅓ of the brim easily palpable.
Sacral promontory felt prominent.

Cavity.
Sacrum: Well curved.
Ischial spines: Small.

Outlet.
Antero-posterior diameter: 4½ inches.
Intertuberosous: 4 inches.
Sub-pubic angle: Average female.

The pelvis, therefore, showed a brim contraction with satisfactory cavity and outlet. With Munro-Kerr’s manoeuvre the vertex did not engage and there was definite overlap at the pelvic brim.

A diagnosis of cephalo-pelvic disproportion due to a moderate brim contraction with a big baby in a multipara, with a previous classical caesarean section delivery, was made. It was decided to do a caesarean section.

Operation. The operation was done under caudal anaesthesia, 70 c.c. of a 1% Procaine solution being used. Premedication consisted of Pethidine 100 mg. and Atropine Sulphate 1/50 gr. These were given subcutaneously 1 hour
before the operation. The abdomen was opened by a lower midline incision extending from ¼ inch above the symphysis pubis to the umbilicus. A few adhesions were found attached to the upper part of the body of the uterus. About 2 inches above the level of the symphysis pubis there was an hour-glass stricture of the uterus (Fig. 1). The stricture separated the uterus into 2 parts. The larger upper part was filled by the body of the foetus and placenta, and the lower smaller part occupied entirely by the foetal head. The previous classical caesarean scar was ill-defined, but was not quite central and it deviated to the right at its lower end where it terminated at the level of the stricture. The baby was delivered by an upper segment caesarean section, a vertical incision being made through the stricture, in order to deliver the foetal head.

Fig. 1. Photograph showing the right side of the uterus with the constriction ring.

The stricture was firm and fibrous in consistency and at the site of the incision was about ½ inches thick. Its internal circumference was little bigger than the baby's neck which it encircled. The stricture was slightly oblique with its lower level on the right side, and it persisted after incision. The lower segment was not very thin. The uterus was closed in layers and finally the abdominal wall was closed in the usual manner. The baby weighed 8 lb. 7 oz. and its general condition was satisfactory. Puerperium. This was uneventful and the mother and baby were fit for discharge on the tenth day.

**DISCUSSION**

In determining the nature of the ring found at operation, the possibilities which one should consider are:

(a) Physiological retraction ring.
(b) Pathological retraction ring.
(c) Constriction ring.
(d) Fibrous scar tissue ring following previous caesarean section (a conceivable remote possibility).

The ring was obviously not a physiological retraction ring, the labour was not a normal one, and this ring was palpable at laparotomy.

A pathological retraction ring develops in cases of neglected obstructed labour where it is palpable in the umbilical region. Its presence is associated with threatening rupture with marked maternal and foetal distress, and often foetal death. At operation the lower segment is very thinned out. Thus a diagnosis of a pathological retraction ring is not acceptable in this case.

A fibrous scar tissue ring may conceivably develop following a caesarean section, possibly as a result of infection, imperfect apposition of the uterine incision or imperfect technique. However, these factors usually result in scar weakness, so that rupture is a danger with future pregnancies. This extremely unlikely possibility can be excluded by the occurrence of 2 normal deliveries following the caesarean section. This leaves one with a diagnosis of constriction ring.

De Lee describes a permanent constriction ring. This, he states, is an area of muscular fibres which undergoes contraction and retraction (permanent shortening) and which does not relax under anaesthesia, drugs, incision or after death.

Considering the case retrospectively, this is the most likely diagnosis. Cephalo-pelvic disproportion has been mentioned as a predisposing factor. It is interesting in that the ring was palpable at laparotomy and that a photograph of the ring was obtained.

Many authorities state that a ring is seldom felt abdominally. In Rudolph’s series 9% were palpable externally. F. J. Browne, however, writes that on abdominal examination no abnormality due to the ring is found. It is, therefore, uncommon to be able to see and feel a ring. I saw a constriction ring previously 3 years ago at this Hospital. The diagnosis of constriction ring is invariably made on vaginal examination.

**SUMMARY**

A brief description of constriction and retraction rings is given.

A case is described in which a ring was found at caesarean section this was considered to be a constriction or contraction ring.

The case is unusual in that the constriction was palpable at laparotomy and because one was able to obtain a photograph of the ring.

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**REFERENCES**

3. Rudolph: (Quoted by de Lee and Greenhill.)

* Definitions based on articles in the following textbooks: