

SACCULATION OF THE UTERUS WITH REPORT OF A CASE

BY

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From the meagre descriptions available of the condition of sacculation of the uterus in even recent text books, one is impressed by the rarity of the condition. However, close personal observations and a review of the recent literature reveal the interesting fact that the condition in one of its many forms, is a frequent phenomenon.

Rubovits reported four cases of sacculation of the contractile portion of the uterus. Hess reported two cases of sacculation of the lower portion of the uterus. Rudolph reported two cases of asymmetrical contraction of the uterus. Shaw reported one case of sacculation at the fundus of the uterus and described two other cases of Schickele and Freund. Hawkins described a case, bringing the total number of cases reported so far to twelve.

Sacculation of the uterus has been described in all portions of the uterus, viz. fundus, corpus, lower uterine segment, cornuae and on both anterior and posterior aspects of the uterus. The condition has been differentiated into true sacculation meaning thereby that a portion of the uterine wall thins out into a diverticulum and the sac communicates with the rest of the uterine cavity by a narrow neck, and into

functional sacculation described by Rudolph (1931 and 1940) wherein asymmetrical uterine contraction and relaxation result in "ballooning out" of a portion of the uterus which disappears after escape of the amniotic fluid.

Etiology. Several explanations have been offered.

1. The condition is said to be due to distension of a thinned out portion or scar in the uterine wall such as may result from operations like caesarean section, myomectomy, curettage, and manual removal of the placenta. This is a simple and feasible theory; and such a condition is a frequent cause of rupture of the uterus during pregnancy and labour.

2. Distension at weak embryological points such as the line of fusion of the mullerian ducts. The uterus is a bilateral organ and the central line where the two halves fuse is the weakest portion, particularly at the fundus, as the case described by Shaw of a diverticulum at the fundus of a three months' pregnant uterus in a primigravida.

3. Distension of the weakened placental site due to trophoblastic activity.

4. *Muscular inco-ordination.* Most of the cases described in the litera-

ture, however, cannot be explained by the theories mentioned above. Muscular inco-ordination, based upon embryological and physiological studies and corroborated by experimental evidence as described by Rudolph, explains the majority of the cases, as also the case described in this article.

According to Rudolph, embryology, comparative anatomy and physiology of the uterus show that it has a bilateral origin. The two halves of the uterus, except where fused, act more or less independently. However, on fusion, a co-ordinated mechanism becomes manifest. The co-ordinated activity of the post-partum uterus of dogs was studied by him, and he discovered an intrinsic and an extrinsic mechanism of the uterus, one resident in the uterine wall itself, and the other in the utero-vaginal ganglia, the former being the most important. Hofbaur described certain cells called "purkinje" cells in the pregnant uterus similar in function to those of the heart. Physiologically and pharmacologically the uterus has been compared to the heart where the sino-auricular node initiates the auricular contractions, the atrio-ventricular node that of the ventricles, and yet there is co-ordination between the former and the latter. A similar co-ordinating mechanism is said to be present in the uterus. On the basis of a functional defective co-ordinating mechanism, the irregularity of the uterine motility is explained.

Comparative anatomic studies of the mammalian uterus from the lowest mammals, the Monotremes, to the highest, the Primates,

will assist us in understanding the embryologic development of the uterus, and will be seen to have a bearing on the problem.

Embryologically, all midline organs of the body, except the bladder, are of bilateral origin. The epithelium of the uterus is derived from the two mullerian ducts, the muscle and the connective tissue from the genital cord. It appears that each half of the uterus derives its share of muscle from the corresponding genital cord, though there may be slight admixture in the line of fusion. The uterus is also bilaterally innervated. Each half of the uterus can therefore act independently of the other, so also different segments of the uterus can contract independently, such as the fundus, corpus, lower segment, cervix, etc. However, there is co-ordination between the various parts in general. Inco-ordination in this neuromuscular mechanism results in functional sacculation of the uterus when only a portion of the uterus remains relaxed while the rest of the organ is contracted.

Functional malformations may be present during pregnancy, may persist during labour, or may appear for the first time during labour. They may be mistaken for anatomic malformations. Anatomic malformations, however, are present before pregnancy; they may or may not be present during pregnancy and labour. After involution of the uterus is complete the malformation will once again be present.

Rudolph has classified functional malformations into:

- (i) Pseudo-uterus arcuatus, and

- lateral obliquity of the uterus.
- (ii) Sacculation of the uterus.
- (a) Sacciform dilatation.
 - (b) Grossesse angulaire.
 - (c) Piskacek's sign.
- (iii) Irregular cervical dilatation.
- (i) *Pseudo-uterus arcuatus* and lateral obliquity of the uterus are due to inco-ordination between the two halves of the uterus. If the contraction on one side is slightly more than on the other, lateral obliquity results. If the difference is marked, pseudo-uterus arcuatus results. Very often this is mistaken for an anatomical arcuate uterus. The condition disappears after delivery.
- (ii) *Sacculation of the Uterus.*
- (a) *Sacciform dilatation* or development of diverticula by a portion or portions of the uterus relaxing while the rest contracts.
 - (b) *Grossesse Angulaire.* Sacculation in the region of the uterine cornuae often mistaken for angular pregnancy.
 - (c) *Piskacek's sign.* A symmetrical enlargement of the uterus described by Piskacek as a sign of early pregnancy. It may be temporary sacculation which disappears later.
- (iii) *Irregular cervical dilatation* is due to inco-ordination between the two halves of the uterus. It has been noted that one half of the cervix may dilate and the other half remain contracted; half of the cervix may be in the first stage of labour, and the other half in the second stage.

5. Pregnancy in an uterus fixed by adhesions or by previous operation scars as retroverted gravid uterus, ventral fixation, etc., where

on account of the fixity of one wall of the uterus, the opposite wall is sacculated by over-distension.

Diagnosis. Besides close observation of the contour of the uterus during pregnancy and labour for areas of softening and tenderness, soft tissue roentgenography in suspected cases may be helpful. Diverticula of the uterus, single and multiple, have been observed by operators at the time of caesarean section.

Complications and Management. In the majority of the mild functional varieties, no harm may result. The course of labour may be prolonged and marked by inertia. The foetal position and presentation are not affected. In such cases, "intelligent expectancy" is the proper method of approach. The delivery may be assisted as and when required.

However, there is a definite risk of thinning and rupture of the uterus in localised sacculation. Acute intraperitoneal haemorrhage may result if the placenta is situated in the diverticulum. Surgical interference is necessary in such cases. Depending upon the circumstances, removal of the foetus and the sac, and repair of the diverticulum may be done. Occasionally, the uterus may have to be removed.

The following is the report of a case of sacculation of the uterus that occurred in the Kasturba Gandhi Hospital for Women and Children, Triplicane, Madras.

Register No. 690/NDR. Operation No. 197. Serial No. 26.

Patient aged 26, IV para, was admitted on 5-2-1952 at 4-30 p.m. with a history of having slight abdominal

pain since two hours after nine months' amenorrhoea.

Previous history: nil relevant.

Obstetric history: First pregnancy—natural delivery at term—still birth—weight not known. Second, forceps delivery at term, live birth, child died after 4 years, weight not known. Third, forceps delivery at term, still birth, weight not known.

Condition on Examination:—

General condition: Pulse rate 80 per minute. Temperature 98.4°F., Blood pressure 120/80. Heart and lungs — nil abnormal. Bladder empty. Urine, no albumen or sugar, deposits nil. No oedema. Not anaemic. Hb. 70%.

Obstetric Examination

Uterus 38 weeks. Position L.O.A. Head floating. Slight pains. No disproportion. Foetal heart heard. Soap and water enema given. Pains subsided after evacuation of the bowels.

Measurements:

Inter-cristal	10"
Inter-spinous	8 3/4"
External conjugate	7 1/2"

Pelvic Examination. Cervix 3/5ths dilated, soft and hanging loose; head above the brim of the pelvis. No prolapse of the cord. No disproportion detected.

12 midnight: Patient complained of severe pain in the lower abdomen. She was restless and during contractions got down from the bed and rolled on the floor. A tender swelling was noticed above the symphysis pubis? Distended bladder. Patient

could not pass any urine. Catheterisation was refused due to the pain.

6-2-52: 12-15 a.m. She complained of excruciating pain in the lower abdomen, and the tender swelling had increased in size. Head not engaged. Foetal heart heard.

At 1 a.m. condition same—Maternal pulse 110 per minute. At 1-30 a.m. the swelling was bigger and very tender. Head not engaged.

Pelvic Examination. Cervix fully dilated. Major portion of the head above the pelvic brim. Small caput on the head.

2 a.m.: A catheter was passed into the bladder with difficulty as she would not co-operate. No urine was drawn. The swelling persisted.

The swelling in the lower abdomen was now diagnosed to be the distended lower uterine segment and not the bladder. However, the uterus was not tense and liquor amnii was draining freely. Pulse rate 140 per minute. Patient restless. Foetal heart audible. As labour was not progressing further, and in view of the tender swelling in the lower portion of the uterus, abdominal delivery was decided upon for threatened rupture of the uterus.

3 a.m. Atropine 1/100 gr. given subcutaneously. Blood grouped. Group A B.

3-30 a.m. *Operation Notes.*

Under general (gas and oxygen supplemented with ether) anaesthesia, abdomen was opened by a median subumbilical incision extended to 2" above the umbilicus. There was no free blood or other fluid in the peritoneal cavity. There appeared a thin lax sac-like swelling containing fluid. It was about 6" x 6" in size. At first

sight it looked like an ovarian cyst. Closer examination, however, showed the cystic sac to be continuous with the rest of the uterus. There was no congestion or other evidence of trauma in the region. Through the translucent wall of the sac, the foetus could be clearly seen inside. The sac was opened by a vertical incision and the uterine cavity entered. A live male foetus, $8\frac{1}{2}$ lbs. in weight, was delivered through the incision in the sac. It was slightly asphyxiated, but was revived easily. The dilated cystic portion had shrunk and was noted to be sacculation of the lower portion of the uterus. As it involved a considerable portion of the lower uterine segment, (it was decided to remove the uterus and) a subtotal hysterectomy was done. The adnexae were normal on both sides. Raw areas were peritonised and the abdomen was closed in layers, after introducing five lac units of penicillin into the abdominal cavity.

Diagnosis. Sacculation of the lower portion of the uterus.

Post-Operative Treatment. One pint of 5% glucose in normal saline was given by intravenous drip followed by 1 pint of blood. Morphia $\frac{1}{4}$ grain given subcutaneously.

Progress.

Patient had a rise of temperature to 103° F with mild abdominal distension. There was inability to pass urine by herself. She was treated with eight lacs of penicillin and 30 c.c. of 10% Soluseptasine every 24 hours, continuous gastric lavage and intravenous fluids. The signs of peritonitis and urinary infection subsided after 48 hours and thereafter the patient made an uneventful recovery.

13-3-52 Clips from the abdominal wound removed. Wound healed well. Baby. Birth weight $8\frac{1}{2}$ lbs. After the first 24 hours it was breast fed, progressed satisfactorily.

20-3-52: Mother and baby progressing well.

31-3-52. Mother: Abdominal

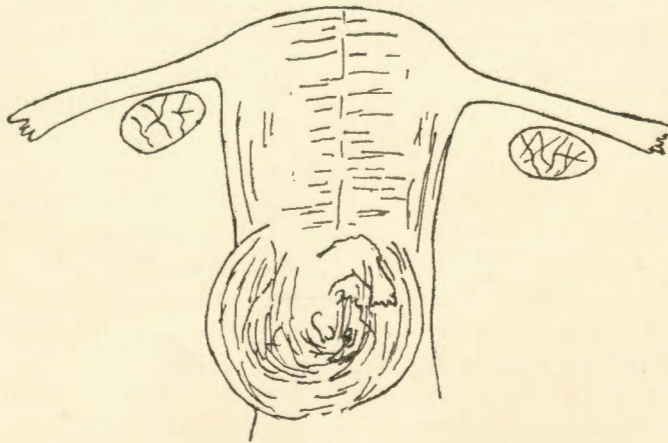


Diagram illustrating the situation of the sacculation in the lower uterine segment.

wound well healed. Pelvic examination revealed a healthy cervical stump and normal adnexa. Baby well.

Mother and baby discharged cured on 31-3-52.

Comments. The points of interest in this case are the onset of severe lower abdominal pain early in labour and the development of a swelling above the symphysis pubis. The swelling was extraordinarily tender and was mistaken for a distended bladder. The head did not engage in the pelvis in spite of good pains. There was no disproportion. Abdominal delivery was decided upon as labour was not progressing and the mother developed signs of distress, and a threatened rupture was suspected. However, the plentiful liquor amnii that was draining, and the presence of the foetal heart sounds and the development of maternal distress in so short a labour could not be explained till the abdomen was opened and the sacculation discovered. Subtotal hysterectomy was done as the major portion of the lower uterine segment on its anterior aspect was thinned out.

The bad obstetric history in the previous pregnancies suggests trauma as a possible etiological factor. The case is reported for its rarity.

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