THESIS

On

Treatment by Retaining or Retained Gynecological Appliances

By

E. Lloyd Owen, M.B., C.M., (Edin).
I HEREBY CERTIFY that this THESIS is my own composition and that the results of my own clinical experience and observation combined with the study of the following works are incorporated in it.

BARBOUR. (A.H. Freeland):
1. Hart and Barbour's Gynaecology
2. Chapters on Inflammation of the Uterus in Allbutt and Playfair's System of Gynaecology.

CROOM. (J. Halliday):


GALABIN. (Alfred L.):


HART. (D. Berry) and BARBOUR (A.H.F.):

ROUTH (Amand): Chapter on Gynaecological Therapeutics in Allbutt and Playfair's System of Gynaecology.
SIMPSON. (Prof. A.R.):

1. Notes of Lectures (Unpublished)

SIMPSON. (Sir Jas. Y.):


SIMS. (J. Marion): Clinical Notes on Uterine Surgery with etc., New York. '73.

The following Periodicals among others

1. Transactions of the Edinburgh Obstetrical Society; Vol. XII, '87.
   A Discussion on the Treatment of Uterine Prolapse, opened by A.D. Leith Napier.
2. British Medical Journal:

giving a Report of the Proceedings
of the British Medical Association
at Glasgow in August 1888.

a. Discussion on Obstructive Dysmenorrhoea
opened by J. Halliday Croom.

b. Discussion on Rapid "Dilatation of the
Cervix Uteri" opened by Alexander Duke.

The following took part in the Discussions:
-Croom, Duke, Reid, Barnes, Stephenson, Byers,
Aust Lawrence, Braithwaite, Walter, Heywood
Smith, Routh, More Madden, and Parvin (of
Philadelphia).
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Finis.
Explanation of Title.

The Appliances referred to in the Title of course consist chiefly of Pessaries, otherwise called Hysteroephores.

They have however, a wider application for example, they include Cotton Tampons, Abdominal Supports and Tents.

They however exclude Expanding Dilators, Staffs, etc.

Their common characteristic is that they are retained or are left in situ for a larger or shorter time.

We should however explain that Medicated Pessaries, which would not be excluded by the Title are not herein discussed.

We may be allowed to express an opinion that even medicated pessaries may have a mechanical action in some cases, for example, by keeping the opposed surfaces of an inflamed mucous membrane from contact, which in itself will favour recovery.
INTRODUCTORY.

We hear of Pessaries being used by ancient physicians. They are referred to in those writings of the Greek, Roman, Arabian and Medieval authors that refer to the Diseases of Women. They were otherwise spoken of as "Suppositoria vaginalia," "balani," "nasalia" etc. The term was more generally applied to various medicated applications introduced into the vagina for the cure of functional uterine diseases, such as Amenorrhoea, Menorrhagia, etc.

At the same time we must remember they were in the habit of using certain mechanical instruments, such as bougies and leaden instruments for Obstructive Dysmenorrhoea and Sterility in the days of Hippocrates (over 2000 years ago).

However the term pessary seems to have been confined to the medicated variety.

"A Pessary, to quote the definition of Paulus Aegineta, consists of carded wool, rounded to the shape of the finger and impregnated with the medicines."

The ancients moreover believed, as we read in
in various Greek and Roman authors, that they possessed medicated pessaries which when applied to the vagina could arouse parturient action, and this oxytocic action was believed to be so certain that Hippocrates made his disciples swear that they would not employ these pessaries for the production of abortion.

No drug is known, in modern times, to have the property, when applied to the vagina of arousing the uterus to parturient action. Neither are we aware of any drug that could be applied locally to the vagina and cervix that would really act as local emmenagogues. We use medicated pessaries for other purposes, however.

The above historical outline is based on the Clinical Lectures of the late Sir James Simpson.

A fact that has struck me greatly is the amount of suffering that women are willing to bear in their special complaints without complaining to their doctors, unless he takes the initiative by enquiring into the subject. This has been illustrated in my own experience of Medical practice.

This has consisted of two periods; on the one hand
hand as an unqualified assistant, and on the other hand, in practice subsequent to graduation. In the former period, though the practice was a heavy one, gynaecological cases formed but an insignificant proportion of the cases treated, but in the latter period they have formed a much larger proportion. This I attribute mainly to the fact that I have made it a habit to inquire into the gynaecological history of all cases whenever I thought some disturbance of the sexual organs might have a bearing on it.
Materials from which Pessaries are made.

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A. Cotton wool, sheep's wool, gauze, tow, oakum (the so-called "antiseptic marine lint"), lint, sponge, sea tangle, tupelo, carded wool, gentian root, medulla sambuci.

B. Bone, ivory, horn, wood (e.g., boxwood).

C. Platinum, copper, zinc, German silver, silver aluminium, steel (e.g., watchspring), block-tin (an alloy of lead and tin), pewter-tubing, lead.

D. Vulcanite, (or vulcanised rubber), celluloid (zylonite), glass, porcelain, gum elastic.

E. Indiarubber (hard, soft, red, hollow, solid), gutta percha.

A. Group.

Paulus Aegineta mentions carded wool in the shape of the finger and "impregnated with the medicines" as being used to make a pessary.

Sheep's Wool retains its elasticity in a state of moisture and pressure better than cotton wool.

According to More Madden sponge tents were introduced
introduced by Philip Barrow in 1539.

Sponge is absorbent and expansile, this being its value in some cases, but more frequently constitutes an objection to its use. When used to make tents this quality is of value, as after being compressed into a small compass of a suitable shape to fit it for introduction into the cervical canal, its pores gradually become filled with moisture and thereby cause it to swell, with the result that the canal is gradually dilated. The same applies to sea tangle, tupelo, gentian root, medulla sambuci. On the other hand when used as a vaginal tampon, its expansibility is a drawback, for

(a) it absorbs the secretions.
(b) These secretions decompose and
(c) set up irritation, pruritus, vaginitis, as well as
(d) giving rise to an increased offensive discharge.

Further,
(e) this dilating quality causes stretching and dilatation of the vaginal canal, and
(f) loss of elasticity and tonicity, and as a result
(g) the tampon has to be enlarged on each occasion
(h) until finally the canal is dilated to the full extent of the pelvic cavity.
cavity.

**B. Group.**

Ivory, horn and silver mentioned by Roonhuyse in 1676 as being used after dilatation of cervix by sponge, etc.

*Boxwood* is light and not porous.

**C. Group.**

In 1859 Sims introduced rings of block-tin. The alloy should be easy to mould, yet not too yielding. *Pewter tubing* is also used. It is malleable, but is apt to separate at the joints. Hippocrates used leaden instruments for Obstructive Dysmenorrhoea. When desired, pessaries made of soft, flexible metal may be used as models for others to be made of vulcanite, aluminium or silver.

*Copper* is also used, for example in the intrauterine stem; sometimes along with zinc as a source of a galvanic current. It is also used for its spring, for example in ring pessaries and Greenhalgh's.

*Steel* is also used for its spring, for example in self-retainning intrauterine stems and in ring pessaries.

*Zinc* is also used, chiefly along with copper as in
in the intrauterine stem. It becomes corroded, roughened and crusted. This crust can be dissolved by vinegar.

Pessaries can be made hollow in platinum and aluminium, but these cannot be afterwards altered in shape.

D. Group.

Vulcanite is the best material for long continued wear. It is light, smooth, nonabsorbent and not affected by discharges, but a deposit may form, which should be washed with dilute nitric acid and it then appears as new.

It can be altered in shape, but sometimes it breaks in the process, so there should be a number at hand in case of accidents. The bending is done in one of two ways:

(a) placed in hot water not far from boiling point for a minute and afterwards plunged into cold water,

(b) The surface oiled, then passed rapidly backwards and forwards through the flame of a spirit lamp. A little practice is required to avoid burning it and spoiling the polish.
polish.

**Celluloid** approaches vulcanite in lightness, smoothness and freedom from irritation. It cannot be moulded by the spirit lamp, but only in hot water. Sometimes used on an iron frame.

**Glass** is also used in making intrauterine stems.

**E. Group.**

**Indiarubber** is absorbent to a certain extent and to that degree is objectionable (See Sponge). It loses its elasticity in time and gets out of shape. The irritating effects can be guarded against if the patient will remove at night and then cleanse in cold water and afterwards wipe dry. A loop at end is useful to facilitate its removal. It should only be used temporarily or until a better substitute has been made. It is valuable however, for its degree of softness and is used as a covering in the elastic ring pessary and as a covering for a hard metal core in other pessaries. Also used for its softness in intrauterine stems and Greenhalgh's spring pessary. It is also used in the hollow form, that is, in hollow inflated thin rubber instruments, for example, indiarubber disk and air-ball pessary. Thin rubber
rubber bands are also used in Greenhalgh's pessaries, and rubber is also used to make a perforated septum for ring pessaries. Also to make the diaphragm of Wynn Williams' stem pessary. It is very useful for external use, as in the form of a perineal pad, and of rubber tubing to secure the pessary or the pad to an abdominal belt. It can in these cases be washed easily. As it is comparatively impervious, it is used as a covering for some other soft material, for example, guttapercha, glycerin, water, air (as we have seen) moemain, etc.

_Guttapercha_ was much used by Sir James Simpson. It is easily moulded by placing in boiling water. A piece may be rolled until a solid ball without fissures is formed. Out of this ball one can make a disc and stem, a hollow perforated disc or a simple ring or horsecollar (Professor Simpson). During manipulation it gradually becomes harder. It is afterwards left for a few minutes in cold water. One must beware of certain adulterated material which becomes too soft in the boiling water and loses shape even with the heat of the patient's body. Most of the sheet guttapercha is of this kind. The best is
is solid and sold in sticks more than an inch in thickness. It is considered by some to be inferior to Indiarubber. It is said to be more porous, and liable to roughen and crack. These effects can be more or less obviated by frequent removal and cleansing. At least it can be worn for a few weeks on trial, and then substituted by vulcanite.
Pessaries Considered Singly.

Temporary Supports.

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**Type.** A plug, pledget, tampon or packing of cotton wool soaked in glycerine.

**Modifications.**

May use salicylated or sublimated wool, may saturate the cotton in glycerine medicated with ichthyol, carbolic acid, alum, tannin, etc. We may also use carbolic oil instead of glycerine.

Other materials than cotton wool may be used, for example, lint, oakum (the so-called "antiseptic marine lint," sheep's wool, gauze (e.g., iodoform gauze) sponge, etc.

Emmet makes a so-called pessary of the shape of a half-grown mushroom in the following way:

A square pledget of damp cotton is taken, pressed between the hands, and the corners folded towards the centre until a ball has been formed. Then as the corners are held between the ends of the fingers, the stem portion is formed by passing a cord about the cotton between the ends of the fingers and the ball portion."
Mechanism and Mode of Action.

According to the manner in which they are placed, they may act as

1. **Props under** the cervix, fornices or fundus.
2. They prevent lateral movement when placed in the fornices.
   a. May act as barriers to movement towards themselves.
   b. May prevent movement of cervix away from them, by rendering the **cul de sac** tense and so keeping the cervix in tether.
3. May also act by **blocking**, plugging the hernial canal, and so preventing escape of the hernia.
4. May soothe the pelvic contents.
5. May improve the circulation and lessen pelvic congestion.
6. May diminish the size of the uterus.
7. May prevent absorption of inflammatory deposits.
8. The glycerine and other medicatives will also have their proper therapeutic effect.

Advantages.
Advantages.

1. Can usually be tolerated when others not.
2. May be retained sometimes when others have failed to be.
3. They are safe; can be worn when beyond reach of observation.

Drawbacks.

1. Their perishable character.
2. In anaemic women, the persistent use of them may set up neuralgic or ovarian symptoms.

Rules and Directions.

1. Sponge should never be used.
2. The tampons may be kept in place if necessary by a perineal band.
3. They may be passed through a speculum and introduced by forceps.
4. It is well to attach a piece of string to them; most of the above have to be replaced every two, three or four days.
5. The marine lint packing, if thorough, may sometimes be left for a week.
week.

Indications and Uses.

1. Prolapse of uterus.
2. Anteversion.
3. Retroversion.
4. Used as a crutch on the sound side after cellulitis in the other side.
5. Temporarily, to allow ulceration to heal, to enable a patient to take exercise, when a pessary is intolerable.
6. When the parts are otherwise too tender to tolerate a pessary, from other causes.
7. They will in most cases demonstrate the fact whether the vagina can retain a foreign body and whether steps can be taken to prepare a more permanent form. (Professor Simpson).
8. When operation is out of the question, we must sometimes depend on these altogether.
9. May be used after introduction of a stem, such as that of Eklund, so as to press the flat cervical end of the pessary backwards or forwards.
Hard Rounded Pessaries.

Type. A hollow globe of vulcanite.

Modifications.

Besides being globular, they may be egg-shaped, flat circular, flat oval, or discoid. They may be solid, as well as hollow, they may consist of boxwood or metal, gum elastic, etc., as well as of vulcanite.

Mechanism.

They keep the uterus and vaginal walls in place by propping them and blocking the canal by their bulk.

Advantages.

Their pressure is distributed.

Drawbacks.

1. They may increase the capacity of the vaginal canal,

   a. By the walls pressing them forwards as dilators.
dilators.

b. By continuous pressure and stretching.

2. May therefore be need of increasing their size indefinitely.

3. Have been known to perforate bladder wall.

4. It is said that the globular ones sometimes require the blade of a forceps for their removal, but this may be obviated by having them fitted with a piece of string.

5. They may interfere with menstruation, but of course this does not apply to elderly women.

6. They may interfere with micturition and defecation by pressure.

7. They may interfere with coitus and conception.

8. They may prevent escape of uterine contents and discharges and vaginal discharges and prevent thorough douching.

Rules.

They must be removed from time to time.

Indications and Uses.

Prolapse, especially in elderly women, but the
the perineum must still have some retentive power. (Prof. Simpson).

Rounded Inflated Pessaries.

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**Type.** An air-ball pessary, consisting of a hollow spherical ball of indiarubber with a tube and stop-cock attached, by which the ball is inflated from a small air-pump.

**Modifications.**

Besides being spherical, they may be pear-shaped, oval, flat oval, flat circular. A distended bladder has also been used.

**Mechanism.**

Same as the Hard Rounded variety.

**Drawbacks.**

Same as those of the Hard Rounded class.

1. But it has a further disadvantage on account of its material and

2. The air is apt to escape.
Advantages.

1. Can be used by the patient herself.

2. Much easier tolerated than some.

Rules.

Must be frequently removed to obviate the disadvantages due to its material.

Indications and Uses.

1. Same as for the Hard Rounded Class.

2. Sometimes useful in tenderness from a tumour or some inflammatory condition.

3. In Inversion, as a substitute for a repositor, used half-expanded on the summit of a cup and stem or Cutter's Prolapse Pessary.

4. Have been used per rectum for Prolapse and Retroversion (Napier).
Emmet's Home-made (Corrugated) Pessaries.

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Material.

Block-tin in the form of rings from six to nine inches in diameter.

Construction.

The ring is moulded or bunched up in a certain regular fashion until a mass with a number of openings of a certain size is obtained—this body is then flattened until it is one-third less in height than in width.

Mechanism.

1. In its simple form it acts by propping up the cervix.
   
2. The vaginal tissue becomes buttoned into the openings in the instrument and thus becomes engaged in it. The whole thus blocks or plugs up the hernal canal.

Advantages.

1. On account of this "buttoning" it can scarcely
scarcely be found out of the vagina.

2. Since the openings should not be large, it is impossible for a very large fold to enter and become strangulated.

**Drawbacks.**

1. Has a tendency to retain secretions.

2. The tissue may become so engaged in it that it cannot be removed without dragging down the vaginal walls.

**Modifications.**

Different modifications of this may be made useful, for example, a part may be fitted for the posterior cul de sac, parts may be fitted to support the anterior vaginal wall, or to support any rectocele.

**Indications and Uses.**

Prolapse and associated conditions.
Material. Made of guttapercha.

Form.

An oblong shelf with a slightly concave upper surface and having attached to the middle of its inferior surface a stem. There is sometimes a notch in the anterior border for the neck of the bladder.

Position.

1. It has the uterus resting on its upper surface.
2. The two extremities of the shelf rest on the inner surfaces of the two ischia.
3. The stem lies between the lips of the pudenda.

Mechanism.

It props up the uterus, being itself supported and by the ischia, side walls of the vagina.

Advantages.

1. Light, cheap and may be made at home.
2. The patient can remove it herself by means of the stem.
stem.

3. It is said not to cause expansion of the vaginal walls.

Drawbacks.

1. Only affords partial alleviation—has no tendency to correct the retroversion usually present.

2. The material is objectionable for continued use.

Rule.

Remove frequently to cleanse it, and to throw astringent injections into the vagina.

Modifications.

1. Disc and stem, e.g., Duncan's. The disc may be circular, but is better elongated from side to side. The patient may be taught to introduce and remove it as she would a button.

2. It may be worn with a T bandage.

Indications and Uses.

Prolapse of Uterus.
Zwanck's Pessary.

Material. Wings of vulcanite, feet of metal.

Form.

There are two plates, usually fenestrated, like a butterfly's wings, hinged together and capable of being made to converge or diverge by means of a screw.

Position.

1. The vagina is stretched laterally and the wings rest on the two ischia.
2. The uterus rests on its upper surface.
3. The stem lies between the labia.

Mechanism.

It props up the uterus.

Advantages.

1. Patient can introduce and remove herself.
2. It has no external support.
3. It suits some people, so that they are not easily persuaded to change it.
change.

Drawbacks.

1. It is apt to go out of order.
2. It may thus fall out, or what is worse become unable to be removed without great difficulty.
3. The cervix from pressing on the projecting hinge is apt to become inflamed or ulcerated.
4. It only affords partial alleviation—has no tendency to correct the retroversion or retroflexion usually present.

Rules.

She should be strictly enjoined to remove every night or else rectal or vesical fistulae may form.

Modifications.

1. Godson's, the best form—the two arms secured by a simple catch.
2. The hinge can be made so that it does not project.

Indications and Uses.

Prolapse of Uterus.
Fig. 47. Cut + Slit

Galilei Fig. 48. Cutting Rige for Pilloca in position (after Minsky)

Hand + Balance Fig. 72, 74. Cut and Slit at some distance from the middle. Heat in a furnace.

Pike 2
Cup and Stem Pessary.

Material. May be vulcanite.

Form. A cup on the summit of a straight stem; the lower end of the stem is fixed in the centre of a square sheet of indiarubber to the corners of which bands of indiarubber tubing are attached for supporting it from a waist belt.

Mechanism.

1. It props up the cervix, which occupies the cup
2. The stem being straight and the canal oblique, the anterior surface of the cervix is pressed backwards by the anterior lip of the cup. It has thus an effect on Retroversion.

Advantages.

1. It has an effect on the retroversion accompanying the prolapse.
2. Does not stretch the vagina laterally.

Drawbacks.

1. The sharp lip of the cup may cause ulceration of the cervix.
2. It has to be removed oftener than other pessaries.
pessaries.

3. Jarring of the cup against the uterus is caused by the patient's bending forwards and backwards.

4. Possesses an external support.

Rule. Astringent injections should be thrown in occasionally.

Modifications.

1. Sometimes made of indiarubber (red) or gutta-percha.

   Advantage— more suitable when much tenderness.
   Drawback— Cannot resist a strong displacing force.

2. Sometimes made with a pelvic curve on the stem.

   Drawback— Does not counteract tendency to retroversion so well.

3. Godson has a cup and stem perforated throughout.

4. The square perineal pad may be absent, so that the bands rise together.

   Drawback— The bands cross the labia and cause chafing.

5. The pad and bands may be of webbing.
webbing.

Drawback—uncleanly.

6. The cup and stem may be used to support an inflating ball.

**Indications and Uses.**

1. Prolapse of Uterus

2. Sometimes used with an air disc or partially inflated airball as a substitute for a repositor in inversion.
Cutter's Pessary.

Form.

A vulcanite support and a curved stem attached to the anterior edge of it. The stem has a pelvic curve (convex forwards below) which is continued backwards over but not touching the perineum, and ends in a single band of india-rubber tubing which passes backwards and is attached to a belt.

Mechanism.

The support props up the cervix and blocks the hernial canal.

Drawbacks.

1. Possession of an external support.

2. On account of the curve, there is a greater chance of the patient misplacing in front of the cervix.

Rule.

The stem should not touch the perineum, or
or else chafing is caused.

**Modifications.**

1. A form of Cutter's having a cup at its upper end.

2. A form of Cutter's having a ring at its upper end, the stem being attached to the edge of the ring.

**Indications and Uses.**

Prolapse of the uterus. Useful after the climacteric period (Napier).
Hodge's Closed Lever Pessary.

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Material. Usually vulcanite, but pewter tubing, block-tin, etc., have been used.

Form.

From the front, an elongated horse-shoe but for a straight transverse bar with rounded angles, forming the "square end" which is also slightly wider than the other end. From the side it is sigmoid, the two curves, limbs, arms or bars of the S are called sacral, posterior, upper, square and pubic anterior, lower, respectively. The sacral curve is long and well marked or consider-able; the pubic curve is short and slightly marked.

Position.

The sacral curve lies in the posterior cul de sac with its convexity backwards. The pubic curve is only sufficiently marked to distribute the pressure equally over the anterior vaginal wall. It rests behind and above the pubic arch and close against the anterior vaginal wall.
wall. Between the lateral bars the cervix hangs free. It should not rest against the pubic rami or any bony support, but be held by the elastic vaginal walls.

Mechanism.

This is fully discussed in the special chapter on the subject.

Advantages.

1. It conforms itself to the shape of the vagina, which is broader above than below. (Prof. Simpson).
2. Allows marital intercourse; also conception. Does not interfere with menstruation.
3. Is usually well tolerated.

Drawbacks.

1. May not be tolerated when one or both ovaries are tender and prolapsed.
2. Patients cannot always be trusted with its introduction, as it usually passes in front of cervix when introduced by an unskilled hand.
3. Where the perineal body is deficient and the weight to be supported is considerable, a
a pessary of this form will usually be forced out.

Rules.

1. A size should be chosen which is slightly narrower and shorter than the posterior vaginal wall.

2. The whole instrument should be made thick, the bar being nearly three-tenths of an inch in diameter (Galabin).

3. It is an exception when a pessary need be over three inches long and about one and a half inches wide (Emmet).

4. Should never be so abruptly curved as to make direct pressure against the uterus at its junction with the vagina, or else the circulation will be obstructed, and irritation and intolerance ensue. It might also form a fulcrum on which the organ might be retroverted.

5. Care should be taken lest the upper limb be caught at the angle of flexion and so only support without straightening the uterus.

6. Whenever it is possible to avoid making pubes
pubes the chief point of support, it should be done.

**Indications and Uses.**

1. Retroversions.
2. Prolapse of Uterus.
3. To prevent prolapse of anterior wall.
   If lower limb be square and with but a slight pubic curve, so that it rests behind and above the pubic arch, it will also support the base of the bladder and so prevent what is often the first step in displacement.
4. Anteversion and chronic metritis (by supporting organ as a whole).
5. Adhesions do not contra-indicate it. (When adhesions are present, a Hodge tends gradually to stretch them and support the uterus—Groom).
Albert Smith Pessary.

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This is much used in America; it is a modification of Hodge's.

Shape.

Somewhat similar to Hodge's, but the pubic limb (as seen from the front) is narrower and more or less beakshaped and (as seen from the side) the curve is more marked.

Mechanism.

Same as Hodge's.

Drawbacks.

1. Its lower end being more or less beakshaped,
   a. it may act as a wedge and favour its expulsion, or at least facilitate its escape.
   b. It is an obstacle to marital intercourse.

Indications and Uses.

Same as Hodge's.
Thomas' Retroflexion Pessary.

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This is another modification of Hodge's.

Shape and Form.

1. The upper part is thicker than Hodge's.
2. It is larger as a whole than Hodge's.
3. The sacral curve is more marked than in Hodge's.
4. The pubic end is bent much downward and is nearly pointed.

Advantages.

1. The thickened upper part gives better support and there is no tendency to produce ulceration (Prof. Simpson) because the pressure is distributed.
2. Pressure on the urethra is avoided by the lower end being bent so much downward.
3. As the lower end is nearly pointed, it rests between the rami and rotation is prevented.

Drawbacks.

1. The price of the instrument is greatly increased by the thickening of the upper part.
2. It is an obstacle to marital intercourse.

**Mechanism.**

1. Similar to that of Hodge's.

2. The direct contact action on the fundus is greater, than in Hodge's, on account of its bulk.

**Indications and Uses.**

Same as Hodge's; is useful when tender ovaries are prolapsed (on account of distribution of pressure.)
Various Modifications of Hodge's.

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Barnes prefers a shape somewhat similar to Thomas'. Prochownick has a pessary with the upper part thickened.

More Madden's Roller Pessary.

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Form. Here the upper part is in the form of a thick roller.

Advantage. The support is distributed, and it occupies space that would otherwise be occupied by the body of the uterus.

Indications and Uses. Retroversions and prolapse of ovaries.

Emmet.

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Emmet has an illustration of the "general shape" of his modification of Hodge. He prides himself however, that he does not adhere to any shape without being first modified by him to suit each individual case.
case. He has the above in six different sizes and of vulcanite, so that he may be able to modify them.

Form. The sacral limb is longer and not so markedly curved as Hodge's.

Mechanism. Same as Hodge's.

Hodge with Transverse Bars.

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Cervix projects through the space behind the posterior of these.

Indications and Uses. Retroversion and prolapse when the anterior vaginal wall sinks down.

A Thick Hodge.

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Indications and Uses. When tender ovaries are prolapsed.

Horse-shoe or Open Lever Pessary.

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This is mentioned by Sir James Simpson.
Simpson. It is another modification of Hodge's.

Form. That of a Hodge pessary with the pubic end open like a horse-shoe.

Advantages.

1. It avoids pressure on the urethra or neck of the bladder.

2. It allows marital intercourse.

Indications and Uses. Same as Hodge's.

GREENHALGH'S.

Form. Resembling a closed horse-shoe.

Construction. Elastic wire (e.g., copper) cased in indiarubber tubing—the wire being wanting at the lower end. They are sometimes called spring-pessaries (Atthill).

Advantages.

1. Easily introduced, as it can be pressed together.

2. The urethra or neck of bladder is not irritated
irritated by it.

3. It allows coitus.

**Drawbacks.**

1. The material is objectionable.

2. The rubber becoming very soft, the unsupported corners are apt to press injuriously.
   Galabin has seen cases where deep ulceration has been produced by it.

**Modifications.**

1. Indiarubber bands across the space to support the vaginal walls.

**Indications and Uses.** Same as Hodge's.

**Greenhalgh's Air Pad.**

Greenhalgh has also a pessary with a swollen upper part for the posterior cul de sac. Napier says it is of value when descent is recent and a prominent feature. Barnes has a modification of it in which the pad contains glycerine instead of air.

Use: Prolapse and Retroversion.
Sir James Simpson's Loop Pessary.

Sir James used it before Hodge's was introduced.

**Form.** Resembling the shape of a horse-collar or pear with the pointed end bent.

**Material.** Was made of gutta-percha.

**Indications and Uses.** Retroversion.

**Priestley's Modification of the above.**

1. Vulcanite used instead of gutta-percha.
2. Kept in situ by external supports.

**Emmet's Folded unusually long closed Lever.**

**Form.** A long pessary of block-tin is folded into & **Material.** two unequal limbs. Depression on anterior end of long limb for neck of bladder. Cross bands of thin rubber may be present on the short limb.

**Position.**
Position. The bend lies in the posterior cul de sac, the long limb in contact with anterior vaginal wall and the short limb in contact with posterior vaginal wall.

Mechanism. Downward pressure on the bend tilting the long lever up behind the pubes - the passage is thus blocked and the uterus prevented from coming forwards. (Emmet). The tilting is doubtful.
Schultze’s Figure of 8 Pessary.

In Germany, this is the one in general use.

**Form.** It has the form of a figure of 8.

**Position.** The upper loop embraces the cervix.

**Mechanism.**

1. The point of junction of the two loops acts as a barrier to the cervix moving forward. The union of the body and cervix being rigid, the fundus is thus prevented from falling backwards.

2. It otherwise acts like Hodge’s.

**Indications and Uses.** Retroversions and prolapse.

“When the utero-sacral ligaments are greatly relaxed, Schultze’s Figure of 8 (or his sleigh pessary) may become necessary.” (Prof. Simpson). Will also relieve some pressure symptoms in anteversion. (Prof. Simpson).
GALABIN'S Lever Pessary.

Material. Vulcanite.

Form. An oval bent so that from the side the lateral bars have the shape of an arc. The anterior limb is thicker and made in the form of a cylinder five-eighth's of an inch in diameter.

Mechanism. The posterior limb not only acts on the uterus indirectly through the posterior cul-de-sac, but it exerts direct contact pressure on the fundus if retroplaced. The anterior limb lies above the public anterior and distends the anterior vaginal wall and base of bladder into a pouch.

Advantages.

1. Retention is sure and escape prevented without assistance from perineal body
   a. by its being hooked behind the cervix.
   b. By virtue of the point formed.

Drawbacks.
Drawbacks.

1. Difficult to hook behind the cervix.
2. Fails if vaginal part of cervix not well marked.
3. If vagina is wide and dilated, it is apt to turn sideways.
4. If the posterior cul de sac is not spacious enough, the pressure (on base of bladder) may not be tolerated.

Indications and Uses.

1. Prolapse.
2. Specially indicated where there is considerable retroflexion.
Ring Pessaries.

The ring pessary was first introduced by Meigs and was recommended by Sir James Simpson.

**Position.** Usually to be placed in the vaginal roof with its upper border behind the cervix; it is supported on upper surface of plane of *levator ani*. It may be placed in front of cervix; it may be placed in the axis of the vagina or across the vagina. (Emmet).

**Mechanism.** See also special chapter.

1. Cervix slung up.
2. Cervix tethered back (if placed in posterior fornix).
3. Cervix tethered forward (if placed in anterior fornix).
4. Barrier to the cervix moving backward (if placed in posterior fornix).
5. Barrier to cervix moving forward (if placed in anterior fornix.)
6. Body of uterus propped up directly, whether placed in front or behind cervix.
cervix.

7. It blocks or plugs up the canal, especially if placed across the vagina.

**Advantages.**

1. Being flat, it naturally passes behind the cervix, therefore no danger of misplacing in most cases.

2. Therefore patient may be entrusted with its use.

3. Therefore may be frequently removed for cleansing.

4. They are shorter vertically than Albert Smith's therefore do not project below the shortened posterior vaginal wall.

5. Can sometimes be retained when others have failed, e.g., Hodge's.

**Drawbacks.**

1. They fail if the support relaxed and the perineum lacerated.

2. They may stretch and dilate the vagina.

3. If there is redundancy of folds of tissue, a fold may come down through the ring and become strangulated.

**Rules.**
Rules. If worn continuously, antispetic injections should be used daily.

Indications and Uses. Prolapse, retroversion, anteversion, chronic metritis.

CLASSIFICATION.

1. Non-elastic or hard; e.g., hollow vulcanite or block-tin, or celluloid on wire frame.
2. Elastic or soft.

Elastic Rings.

1. Meig's, made of gutta-percha—solid.
2. Solid rubber.
3. Ring pessary with spring—one of the best.

Made of steel spring covered with indiarubber. The diameter of the spring with its rubber covering should be at least half-an-inch that its pressure may be tolerated. The two largest sizes three and a quarter inches and two and seven-eighth inches in diameter will be found most useful. The spring commonly used is often not stiff enough for the larger-sized ring, and
and the consequence is that the ring is compressed and forced out. In such a case a pessary with stiffer spring may be retained.

3. Hollow indiarubber disc.

a. Thin rubber and inflated (e.g., by a hypodermic needle and syringe— the needle being left in until inflation is complete). The puncture will close, especially if the rubber is thicker at the part punctured.

Drawback. - The air tends to escape.

b. Filled with water.

Drawback— the water evaporates.

4. Indiarubber casing (waterproof) over mocmain, guttapercha, etc.

Drawback— the padding sometimes gets hard.

5. Glycerine Ring Pessaries (Patent—Arnold).

Watchspring covered with rubber. Outside this and between it and another thin case of rubber there is glycerine.

Advantage. Keeps soft, and glycerine does not escape.

6. Ring filled with a perforated diaphragm.
diaphragm.

Drawback - tends to retain discharges.

Advantage - will correct tendency to cystocele.

Advantages of Elastic Ring Fessaries :-

1. Easily introduced.
2. Easily adapted to the vaginal cavity.
3. A considerable size can be introduced.
4. Can be indented for the neck of the bladder.
5. More easily tolerated.

Rules.

1. To avoid pressure on urethra, make a depression by passing a small band around it.
2. Antiseptic injections daily.

Indications and Uses.

1. Same as for rings in general.
2. May be tried for prolapsed ovaries.
3. May be used after unilateral cellulitis to support the sound ligament as by a crutch.
4. Used in laceration of the cervix.
5. May be cemented on the summit of a straight cup
cup and stem, or of Cutter's Prolapse Pessary as a substitute for a repositor in inversion.

Thomas' Modification of Cutter's Pessary for Retroflexion.

The single band of the instrument is carried backward over the perineum and is attached to a belt.

Position. The upper end occupies the posterior cul de sac.

Mechanism.

1. By stretching of posterior cul de sac
   a. the cervix is kept held backwards.
   b. The cervix is kept held upwards.

2. By direct contact
   a. The body is kept pressed backwards
   b. The body is kept pressed upwards.

Advantage. Can be retained when some others fail.

Drawbacks.

1. From its having an external support it is more likely to communicate shock to the uterus.

2. It has to be removed daily.
daily.

3. Liable to be replaced in a wrong position by patient.

**Indications and Uses.**

1. Retroversions.

2. When Hodge fails from posterior cul de sac not being well marked.

3. When vaginal walls are too lax to take a grasp of a simple pessary.

4. When desired to gradually stretch a short posterior cul de sac.
20. Hartk. Hart
21
22
23
24

Plate 4
Hewitt's Cradle or Double curved Pessary.

Material. Usually vulcanite, but was originally made of wire covered with gutta-percha.

Form. Two curved rings joined together by a bridge or saddle. Hewitt recommended later that the rings should be made unequal, the smaller ring to be foremost.

Position. The saddle lies in the anterior cul de sac. The upper ring has the cervix through it and lies in the posterior cul de sac. The lower ring is also supported on the posterior wall of vagina.

Mechanism.
1. Same as anteversion pessaries in general.
2. Further, the posterior ring prevents the cervix going far back.

Advantages.
1. An intelligent patient might be taught to remove and replace herself.
herself.

2. Does not interfere with micturition and defecation.

**Drawbacks.** See anteversion pessaries.

**Indications and Uses.** Anteversions, and Anteflexions.

**Modifications.**

1. Sometimes the lateral bars are not connected by a bridge.

2. It may be provided with so-called "crutches" to prevent lateral displacement.
Professor Simpson: An Anteversion Pessary.

See Contributions to Obstetrics and Gynaecology (1880) p. 29.

Material. Vulcanite.

Form. Bivalved. The valves (anterior and posterior) were fenestrated, and united by a hinge at their lower end and kept apart by a slight spring. The posterior was longer than the anterior. The anterior had a notch to support the body of the uterus.

Mechanism.

1. The anterior valve by direct pressure would tend to prop the uterus and to un-vert and un-flex it.

2. The posterior valve would support the organ as a whole, supplementing the anterior of the suspensory ligaments.

This pessary succeeded in relieving her of her most distressing symptom—pain in the left groin—after use of sponge-tent (Dr Moir), intrauterine stem
25. 
  *Antonius* (military)

26. 
  *Antonius* (military)

27. Gelasius, Antonius, Pons

30. Gelasius, Antonius

31. Gelasius, Antonius

32. Summus, Smith, Scholes

It is with a view to...
stem pessary, various modifications of Hodge's, Hewitt's and all other pessaries had failed.

**Gutter's Loop for Anteversion (Sic).**
This is somewhat similar in shape to Gutter's Pessary for Retroflexion (Thomas' Modification), but it is bent so that its upper end occupies the anterior cul de sac. It is attached to a belt by a single band like all Gutter's Pessaries.

**Thomas' Anteversion Pessary.**

**Form.** A ring pessary to the anterior aspect of which is hinged a bow.

**Position.** The folded bow lies in front of the cervix.

**Drawbacks.** A great obstacle to coitus unless removed from time to time.

**Rules.**
1. Thomas insisted that patient must remain under
under observation whilst using it or

2. she should be taught how to remove it.

3. Thomas recommended a supra-pubic pad to remove all weight from the fundus.

4. She should be examined from time to time to see that there is no injurious pressure on the fundus.

Thomas' Anteflexion Pessary.

A. An intrauterine stem and cup, connected with a loop for anterior vault.

B. The above with a lever for posterior cul de sac in addition.

Barnes' Anteversion Pessary.

Material. Made of indiarubber.

Form. Somewhat like a ring with a bow for anterior fornix fitted to it.
Galabin's Anteversion Pessary.

Material. Vulcanite.

Form. Resembles a thick short Hodge's with its anterior limb replaced by a broad arch directed upwards, and nearly square at its summit.

Mechanism.

1. Static function: keeping anterior cul de sac tense.

2. Kinetic function: a lever with its fulcrum nearer the lower end, therefore a slight pressure (Power) on the end in the posterior cul de sac will exert a greater pressure on the anterior vault (Resistance). (Galabin).

Advantages.

1. Allows marital intercourse, because it occupies a higher position even than Hodge's.

2. Easily tolerated.

Drawbacks.

1. It is difficult to introduce (Its inventor
inventor claims this as an advantage, because there will be no danger of selecting one too large! therefore

a. patient cannot introduce it herself.

b. It is unsuitable for virgins or where the outlet is narrow.

Caution. Care must be taken that the posterior limb is not too long or else it keeps cervix back and increases anteversion.
Miscellaneous Pessaries.

Ulcerating Pessaries.

A. J. Weir's

Description. A metallic pessary of copper, with a ring of zinc round the margin.

Mechanism. The ulceration due to pressure is hastened by a slow galvanic action.

B. A merely large pessary, to exert more pressure than usual, has been used.

Pessary for Cystocele.

A loop to support the anterior vaginal wall. The stem moves forward and is fixed to a pelvic bandage over the pubes.

Schatz' Cup Pessaries (Schalen-Pessarium).

Recommended in anterior lacerations of the pelvic floor, operation being contra-indicated.
Prolapse with Elongated Cervix.

A light cup of rubber may be used to contain the cervix. This is swung to a pessary by a pivot on each side.
EXTERNAL SUPPORTS.

A. Abdominal Supports.

Description. Usually a belt or bandage round the lower part of the abdomen, e.g., Hall's bandage.

Modifications.

1. Material may be elastic.
2. A broad flannel bandage.
3. Supra-pubic pad added—this may be a padded metallic plate.

Mechanism.

1. Prevents pressure of the abdominal upon the pelvic viscera, so weight removed from fundus.
2. Acts partly by directly pushing fundus backwards.
3. Reduces hyperaemia by keeping up a gentle pressure upon the pelvic organs.
4. Relieves the abdominal walls and allows them to restore their tonicity.
5. Diminishes mobility of the viscera.

Indications and Uses.

1. Anteversion
1. Anteversion.
2. Abdominal laxity.
3. Prolapse of uterus with or without lacerations of perineum or relaxation in the muscular planes, alone or
4. with ball, ring or discoid pessaries to help them.
5. In hyperemia with or without displacements.
6. Large abdominal tumour—discomfort lessened.

Rules.
1. To be applied fairly tight at lower edge and slack at the upper one.
2. There should be good abdominal development.

External Supports. (Continued)

B. Perineal pad.

Mechanism.
1. It supports the hernial mass of prolapse.
2. It may diminish its size by gradual pressure even when irreducible—irreducible prolapse.
3. It may support a pessary, especially when attached to it (as in cup and stem).
stem).

**How Pessaries are supported externally.**

1. A T-bandage attached to a bandage round pelvis with or without a perineal pad.
2. Some other form of suspensory straps or bandages.
3. Four elastic bands fixed to the pessary or to the perineal pad.
4. Pessary may be fixed on a strong bent wire, the outer end is fixed over pubes in a belt or bandage strapped round the pelvis.
5. The stem of the pessary may curve back over (but not touching) the perineum and end in a single band, which is attached to an abdominal belt, e.g., Cutter's pessaries.

**Tents and Tent-Pessaries.**

**Materials.** The have been variously made of decalcified ivory, medulla sambuci, gentian root, sponge, tupelo, etc.

*Sponge tents were introduced by Philip Barrow in 1539 (More Madden). The use of sponge tents was revived by Sir James Simpson in 1844.*
1844.

Gentian root and decalcified ivory are used by Porak (Amand Routh).

Antiseptic wool and gauze are sometimes used in the present day for gradual dilatation of the cervix.

Position. They are sometimes inserted nearly up to the fundus.

Possible Modes of Action and Mechanism.

1. Dilatation of cervical or whole uterine canal.

2. Straightening of the cervix or whole organ.
   a. for the time being- while the instrument in situ.
   b. The straightening may endure afterwards, same as sometimes after a confinement.

3. The walls of the uterus are softened.

4. The cervix prevented from contracting after incision.

5. Remedy an impaired condition of the uterine mucous membrane interfering with the normal changes.

Advantages.
Advantages.

1. Not very painful (except after incision).
2. No danger of hemorrhage or laceration.
3. No danger from shock.
4. Not so irritating (except after incision).

Drawbacks.

1. Slow
2. Uncertain
3. Comparatively unsafe
4. Relapse apt to occur after dilatation and straightening.

Rules.

1. Proper antiseptic precautions.
2. Inadvisable when tendency to inflammation.

Emmet says there is a condition resembling inflammatory in "Flexion!" This may be the result of the flexion however, and straightening will improve it.

Indications and Uses.

1. Obstinate retroversions: more especially useful when complicated with hypertrophy (Sir James
2. Anteflexion and anteversion.
3. Retroflexion previous to effecting reposition.
4. Dysmenorrhoea with stenosis of os and flexion.
5. In Dysmenorrhoea before the periods in the congestive and membranous forms.
   a. Thin tent two days before the flow
   b. Removed next day, uterus washed out, and a similar one introduced.
   c. Removed on the morning of the expected period.
6. Elongated cervix.
7. After incision of cervix.
Plate 6

33. Sper, Sti, Gebam (ft enig)
34. Dulle Geschlo von Kandelung in Sti
35. Dulle Geschlo in Sti
36. Dulle Geschlo
37. Dulle Geschlo
38. Dulle Geschlo
39. Dulle Geschlo
40. Dulle Geschlo
41. Har d'Blom 720. Gemildigt Abkenten Sti (Gute Books)
Intra-uterine Stems.

Type. A straight, solid stem (or bougie) and bulb (sphere, disc, base or shield) of copper, with a perforation on the lower surface of bulb to receive the point of a staff for introducing it.

Modifications.

Materials. Besides being made entirely of copper, other materials may be used.

1. The stem may consist of two metals -
   a. The half next the bulb, like the bulb itself, being made of copper, the other half of zinc (as suggested by Dr Weir and adopted by Sir James Simpson)
   b. Zinc and copper side by side in the form of a spiral wire.
   c. Alternate beads of zinc and copper.
   d. Two parallel pieces of zinc and copper.
   e. Jointed: alternate joints of zinc and copper.

2. May be of vulcanite or glass with a vulcanite base (e.g., Thomas’ Meadows’).

3. Of German silver, or steel, or flexible spiral wire (Duke’s).

4. Of indiarubber, of guttapercha (e.g. Greenhalgh’s).
Simpson Vol.3 Fig 142 Wire Passing for Retainer

42. Smith's chair
43. Smith's chair
44. Child's chair
45. Standing chair
46. Side chair (in) Retainer
47. Side chair (out) Stick

Plate 7
Greenhalgh's).

1. The stem may be solid, as in our type, with or without perforation on the bulb for introducer.

2. Or "split" into two springs (steel, or vulcanite as in Chambers'), the two branches tending to diverge.

3. Or hollow (e.g., Greenhalgh's tube of caoutchouc large enough to admit a sound and with four slits at its upper end to receive the uterine secretions). Greenhalgh has also a vulcanite perforated stem.

How introduced? They may be introduced by

1. The fingers, or by a staff (e.g., our type and Greenhalgh's).

2. Or by a special introducer 'as in the self-retaining instruments. (Chambers' is a hollow cylinder no larger than a sound).

In some the stem is fixed in the edge of a disc, e.g., Amann's vulcanite stem.
How retained.

1. In some cases even the simplest forms are retained, those of vulcanite and indiarubber especially. Also the crust that forms on the zinc in the galvanic stem tends to help it to be retained. They are more apt to remain when os internum is contracted (Sir James Simpson).

2. The so-called "self-retaining" are retained by their branches (which may have bulbs at their tips) entering the horns of the uterus. For example, Bantock's. Duke has a self-retaining galvanic stem.

3. Loose vaginal support may be used, which may in addition supplement their action, for example, a glycerinated tampon (which may be used also to press back the flat cervical end of a pessary, e.g., Eklund's) or some small vaginal pessary: a Hodge may be used or a boxwood disc, or a vulcanite shelf-pessary may be placed beneath it.

4. Attached vaginal supports are sometimes used, which may also supplement their action. Sir
Sir James Simpson treated a case where version remained after flexion had been rectified by adapting the stem by means of a spring to a metallic ring in the vagina.

Thomas' consists of a simple straight stem resting by its bulbous end in a cup fixed near the upper extremity of a Hodge.

In Wynn Willimas' the bulb rests in a cup near the centre of a somewhat oval ring having an indiarubber diaphragm.

The cup is not complete but is perforated for the introducer. Meadows and Routh have devised forms.

5. Connected through a vaginal part to external supports, for example, Sir James Simpson mentions a case of retroversion (without flexion) treated with such a pessary.

There are two parts

a. Utero-vaginal, the vaginal part being tubular.

b. An external wire frame for the pubes with a stilette fitting into the tubular vaginal part.

Comparative Value of the different Modifications.
Comparative value of the different Modifications.

1. Greenhalgh's Soft Stem.
   a. Accomodates itself to the shape of the canal.
   b. Does not readily slip out.
   c. Is not liable to injure and is useful when some intolerance from endometritis.
   d. It allows exit to the uterine secretions.
   e. Permits marital intercourse.
   f. Can be introduced by a simple staff.
   g. Material is offensive and irritation is set up.
   h. Does not effectually straighten the uterus.

2. Vulcanite and glass are non-irritating and may be tolerated when endometritis present, but tendency in the latter to slip.

3. Chambers' cylinder no larger than ordinary sound
   a. Easily introduced.
   b. No previous dilatation needed.

4. The form hollow in its lower part is useful for exit of secretions.

5. The self-retaining are convenient after incision of cervix.

6. A large size of Duke's instrument is useful for
for keeping the os and canal open after rapid dilatation.

7. Stems combined with external supports to be altogether condemned, since they
   1. destroy the natural mobility of the uterus.
   2. Expose it to dangerous shocks.

8. Stems resting on vaginal supports should not be rigidly connected to them, so as to respect the natural mobility of the uterus.

9. Self-retaining: the comparatively sharp edges of the branches are most likely to set up irritation than the straight.

10. Wynn Williams' is most likely to be useful in anteflexion.

11. Thomas' keeps uterus more effectually in retroflexion.

12. Of the galvanic stems, the spiral modification is most readily tolerated.
Contra-indications.

1. Not justified in Amenorrhœa if young and unmarried unless danger to health or life.
2. Not in acute inflammation of uterus and adhesion.
3. Not where considerable tenderness of the uterus until it is treated.
4. Unadvisable where peri-uterine inflammation has previously existed— it is liable to be rekindled.

Indications and Uses. Has been recommended in the following:-

1. Amenorrhœa, Dysmenorrhœa, Sterility.
2. Anteflexion, retroflexion, retroversion, anteversion.
3. Stenosis of os externum, of cervix, of os internum.
4. So-called elongated cervix. (Emmet).
5. After incision of cervix.
6. Vicarious hæmorrhage in dangerous situations.
7. Undersized uterus.
The following are the principal references:

Page 776: Contributions to A New Study of 1880

Page 761: A New Study

Page 756: A New Study of 1880

Page 754: A New Study

Page 752: A New Study

Page 750: A New Study

Page 748: A New Study

Page 746: A New Study

Page 744: A New Study

Page 742: A New Study

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Choice of a Pessary.

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When we come across a condition which is included in the class of diseases amenable to treatment by pessaries, we must consider first whether there are in this particular case any contra-indications to such treatment. If there are, we must decide whether they can be removed or not. If there are no such contra-indications, or if they have been removed, then we must ask ourselves what kind of mechanism is most likely to effect our object, after which we must consider the advantages and drawbacks of those forms that suggest themselves to us as answering to the mechanism or action we require.

After fixing upon a certain form, we can ask ourselves what size of instrument and what modifications in it will be necessary for the individual case.

If the instrument is made in different materials, we must also decide upon the most serviceable.

Proper preparatory, supplementary and after-treatment will also be necessary in most cases.
cases.

Fitting of the Instrument.

We must be able to appreciate slight shades of difference and to fit pessaries to suit particular cases; hence the value of guttapercha, as recommended by Sir James Simpson, as material for pessaries, at least temporarily; also block-tin rings as introduced by Sims.

Time, a little ingenuity, and, failing the use of such materials as those just mentioned, a considerable number of pessaries to select from will be necessary. The pessary should be made to fit the vagina and not the vagina be expected to adapt itself to any instrument.

The vagina varies in shape

a. by nature.

b. According to the displacement, and not only the kind of displacement, but its degree, etc.

Further, after the instrument has been worn some time the vagina again alters in shape. The change may be for the better, and this is more likely to happen when the instrument is small enough to permit it to regain its natural size to a certain degree. When too large
large an instrument has been used or material posses-
sing dilating quality, then the capacity of the canal
will be increased and a still larger instrument re-
quired perhaps. As a rule, a Hodge pessary, for
example, should be narrower and shorter than the
posterior vaginal wall.

It may be taken as a rule that when an instrument
1. fits properly and
2. has corrected the displacement
in the words of Sir James Simpson "She will be uncon-
scious that she has any foreign body in the vagina,
except perhaps from the comfort it affords her."

Whenever possible the pessary should be fitted
without any outside appliances, so that she may forget
as far as possible, that she is wearing a support,
otherwise she tends to become a confirmed invalid.

This however, can not always be done, for example,
a wire frame over the pubes would sometimes be
necessary to retain an intrauterine stem pessary,
which was the case, "unfortunately" as he says, in a
patient treated by Professor Simpson for Anteversion.
(He subsequently used a bivalved pessary in this case.)
Its Seat of Support.

The support for the instrument is best taken from the bottom of the posterior cul de sac and upper surface of plane of levator ani rather than from behind symphysis. This however, cannot be done in lacerations through the perineum before operation, although some form of pessary will be needed as a temporary relief. In this case, in order to lessen the evil, a depression should be made in the instrument to protect the neck of the bladder.

Frequency of Removal and After-treatment.

As for frequency of removal of a pessary we must steer between two opposite courses.

On the one hand the less frequent the better, thus facilitating the gradual recovery of tone in the uterine ligaments, and the better the fit the less frequent has it to be done. As Emmet says:— "It were well could it be left for months."

On the other hand, as Sir James Simpson says, all
all pessaries unless frequently removed increase the leucorrhoeal discharge, and if left all too long the discharges almost certainly become fetid and the vaginal walls may even ulcerate around the circle of pressure. They should be removed frequently both that they may be cleaned and that some astringent lotion may be thrown into the vagina." And we may add, in order to examine the parts for evidence of injurious pressure or to learn whether the size of the instrument requires to be modified. Also the uterus may have to be replaced, and erosions treated, perhaps also strangulation of redundant folds of tissue may be present.

Some pessaries ought to be removed every night, for example Zwanck's otherwise there is danger of rectal and vesical fistula, etc.

Others may be left for three months in situ if properly fitting, as Atthill says. But as he says further, stems should not be left more than four or six weeks without removal. With galvanic stems however, on account of corrosion and roughening of the zinc, they should not usually be left over three weeks at a time. Stems may be left a little longer on each occasion. After being worn for a few months
months, they may be left off for a few days to watch the effect. Pessaries may have to be worn for a period varying from a few months to a few years. The patient should be seen within two days after putting a pessary. Of course she should return sooner if she has pain.

The patient should return in a week or two, then every month, then every two months, etc. Should conception occur while wearing a pessary, e.g. Hodge, it may be worn till the fourth month. After that the uterus rises above the brim.

A stem should be provided with a thread so that the patient may withdraw it in case of pain, or rigors or feverishness.

Vaginal injections must be used occasionally, in some cases daily, or even twice a day.
The Choice of Materials.

The following are the desirable qualities.

1. **Malleability**: to be flexible and easily moulded by proper means, but not to be too yielding nor affected by the heat of the patient's body.

2. **Durability**: not rapidly deteriorating, not affected by discharge, cracking, losing shape and elasticity.

3. **Softness**: of value especially in case of tenderness.

4. **Elasticity**: an advantage in introduction; also enabling it to accommodate itself to the shape of the canal and to slight (physiological) displacements. Spring must not be too weak or else it is forced out.

5. **Smoothness**: and likelihood of retaining it. Easily introduced, minimum of friction, easily cleaned. Has the disadvantage of not being so easily retained.

The following are the undesirable qualities.

1. **Frangibility**: opposed to malleability. Tendency to break and crack, and harbour secretions.

2. **Corrosibility**: roughening etc., causing friction, difficulty in cleansing, etc.
etc.

3. Absorbency: Porosity: expanding and swelling. Causing dilatation, irritation, etc. This quality desirable in tents.

4. Irritation: Causing leucorrhoea, etc.

5. Heaviness: causing superfluous weight upon the seats of support, which may be already weakened.
Negative Rules to be observed.

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1. The appliance should not be felt by the person wearing it; much less should it cause pain or discomfort.

2. It should not interfere with

   Micturition

3. "   " Defecation

4. "   " Progression

5. "   " Menstruation (of course this only applies before the climacteric period)

6. "   " Coitus

7. "   " Conception

8. It should not obstruct the escape of uterine discharges or contents or vaginal discharges.

9. It should not prevent douching of the vaginal canal.

10. It should not be displaceable by the ordinary functions and movements.

11. It must not interfere with uterine mobility, that is the movements which the uterus must commonly undergo in the changing relations of the pelvic viscers, nor with its expansion during pregnancy.
pregnancy.

12. It should not overstretch and destroy the elasticity of the vaginal walls, especially if only to be used temporarily.

13. It should not press on the neck of the bladder or the urethra, therefore

13a. avoid making the pubes the chief point of support whenever possible.

14. It should not press upon bone if it can be avoided.

15. It should not press upon the junction of the uterus and vagina, else it will cause obstruction to the circulation, irritation and intolerance, and it may act as a fulcrum over which the uterus may be retroverted.

16. It should not press on any tender spot indicating cellulitis or other inflammation.

17. It should not be liable to fall out, from being too small, wedgeshaped or possessing too weak a spring.

18. It should not be too thin at any part, else it is apt to cut into the tissues.

19. It should not be angular or cornered.
cornered.

20. It should not cause uneven pressure.

21. It should not have external supports if possible, for they are apt to communicate shocks to the uterus, to cause chafing of the labia or perineum and to keep reminding the patient of her condition.

22. An intra-uterine stem should not be rigidly connected, if at all, to a vaginal support, else shocks are communicated to the fundus and its mobility interfered with.

23. It should not be complicated in structure, or else it is apt to go wrong.

24. When the tissue is redundant, the openings in the pessary should not be large enough to allow large folds to enter and become strangulated.

25. It should not project below the vulva.

26. Hard pessaries not to be used when the patient is beyond reach of observation.

27. A pessary should not be removed before seeing that no portion of tissue is engaged in or adherent to it, or else the vaginal walls or uterus may be dragged down.

28. It should not be left too long without removal.
removal.

29. On the other hand, it should not be removed too often, or else the ligaments are prevented from gradually recovering their tonicity.

30. A pessary should not be chosen which hinders, instead of helping, the other means that may be employed to improve the condition.

31. It should not carry the uterus to the opposite extreme of the condition for which it is used. It should only keep the organ in its normal situation.

32. It should never be so large that it will prevent the vagina regaining its natural size. It is an exception, for example, when a Hodge pessary need be over three inches long and one and a half inches in width.

33. A diaphragm should be dispensed with when possible as it harbours secretions.

34. Material: don't choose material that is frangible, corrosible, absorbent, heavy, irritating, expensive.
Positive Rules to be observed.

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1. Much time and patience is required to get a pessary to fit.

2. There must be a considerable number of pessaries to select from, or the instrument must be "home-made."

3. A careful vaginal examination must be made and the capacity of the vagina noted.

4. A pessary as near as possible a model of it should be selected, or a little narrower and shorter, so as to allow the vagina to regain its natural size.

5. Yet it must be large enough to keep it in place and to give the needed support to the uterus.

6. It should keep in place in face of the ordinary functions and movements.

7. It should be easily introduced and placed in position.

8. It should be easily removed.

9. The patient should be informed that she is wearing a pessary.

10. The patient should remain under observation or be taught how to remove it and to replace it.
11. Whenever patient is beyond reach of observation, it is only safe to employ a temporary support or rubber disc.

12. She should be told when to come back for observation.

13. She should be told to return if she becomes sensible of the pessary, much more if it gives her pain.

14. She should be warned of the risk of wearing for a long time.

15. The instrument should be removed occasionally

   a. to cleanse it
   b. to see that there is no injurious pressure
   c. to see that there is no strangulation of folds of tissue
   d. to see there is no cutting into the tissue
   e. to treat erosions
   f. to replace the uterus if moved from its position
   g. to note the altered shape of the vagina so that the instrument may be modified accordingly.
   h. to throw astringent injections into vagina.

16. The support of the instrument should be taken from
from the bottom of the posterior cul-de-sac and surface of plane of the levator ani when possible.

17. If support has to be taken from the symphysis, a depression should be made for the neck of bladder.

18. The patient's general condition should be attended to. Action of the rectum to be regulated, or else the instrument may be displaced.

19. Antiseptic irrigation should be used frequently.

20. The instrument should be thick so that the pressure may be distributed.

21. It should be gradually rounded, so as not to cause uneven pressure.

22. It should allow secretions to descend through it, and allow douching, that is, allow the lotion to rise through it.

23. In the case of an intra-uterine stem, there should be a thread for the patient to be able to remove it if pain, rigors, feverishness should occur.

24. An intrauterine stem should be carefully sterilised and used with antiseptic precautions.

25. A pessary should be chosen that will allow the employment of other beneficial measures.

26. If great sensitiveness and intolerance during
during treatment, try the effect of a recumbent posture.

27. It should be recognised that fitting is required for each individual, for the shape of vagina varies with the nature and degree of displacement and apart from it.

28. To test whether the displacement is securely reduced, the patient may be asked to cough and to walk, etc., before she is left.

29. The pessary should support the uterus at a level where the patient feels no fulness or bearing down or other symptoms.

30. Keep in view that a pessary may be curative as well as palliative.

31. Material: choose material that is malleable, durable, elastic, soft, smooth.
Untoward Results from Pessaries.

1. Discharges increased: offensive; hemorrhagic.
3. Pelvic Peritonitis, Pelvic Cellulitis, Ovaritis, General Peritonitis.
4. Vesical Fistula, Rectal Fistula, Ulceration on to Peritoneum.
5. Hæmatocele.
7. Capacity of vaginal canal increased, perhaps to full extent of the pelvic cavity.
8. Shocks to the fundus.
9. Strangulation of redundant folds of tissue.
10. Pain, Rigors, Feverishness—some of the symptoms of the above conditions.

Prevention.

They are nearly all preventible. They arise from

1. Application with want of regard to contraindications.
2. Neglect and want of care, such as the use of injections, occasional removal, etc.

Emmet says that cellulitis may result from lifting
lifting the uterus too high in the pelvis— the
connective tissue is then put on the stretch.
He says this is a common error in practice.

There is no doubt that in the act of reposition,
one may be too 'thorough' in this respect, but we do
not think the uterus will remain very long in this
too elevated position.
The Relative Importance of Displacement and Congestive Conditions.

There are various theories as to the order in which displacements, hyperemia and important symptoms, e.g., dysmenorrhea, sterility, etc., occur. They may be classed into two groups, in each of which two sub-divisions may be distinguished.

1. Displacement Primary.
   b. Congestion secondary, Symptoms tertiary.

2. Congestion primary.
   b. Displacement secondary, Symptoms tertiary.

(We might add a third group where the conditions are independent of one another.)

By tertiary we mean that the symptoms are dependent on the primary, but indirectly through the secondary. Many believe further that displacement may be exaggerated by the congestion which it itself brings on, and others believe that congestion may be increased by the very displacement of which it itself is the
the cause.

It will be seen that both

1a (Symptoms secondary to displacement) and
2b (Symptoms tertiary to secondary displacement) are consistent with the Obstructive Theory of Dysmenorrhoea and Sterility, and on the other hand both

1b (Symptoms tertiary to a secondary congestion) and 2a (Symptoms secondary to congestion) are consistent with the Congestive Theory of Dysmenorrhoea and Sterility.

THEORY I. Displacement primary.

Professor Simpson (referring to retroversions states it as his experience that if the uterus be straightened and kept so, the congestion disappears and he describes a case illustrating this.

Referring to anterior deviations again, he states that there remains a residuum of cases in which the practitioner finds that he cannot effect a cure of his patient's condition without having regard to the displacement and using means to correct it.

Referring again to retroversions he states there are many cases where reposition of the uterus without
without special antiphlogistic treatment is followed by the removal of congestive and catarrhal symptoms.

In the same connection he says that in most cases mechanical support must be maintained after the inflammatory condition has subsided, for if allowed to return to its abnormal place, the inflammatory changes will all recur.

Emmet says (p. 353) "By correcting mal-position the vagina and other supports of the uterus are enabled to return to a normal condition. The uterus also in all probability would be able to gain its natural size by the circulation being established."

Here it will be noticed no mention is made of special antiphlogistic treatment.

Most authorities allow however that both the displacement and the congestion must be attended to for even although displacement is in the most cases primary to congestion, it may nevertheless be exaggerated by the congestion it brings on, and even if congestion is primary in some cases, it also will be increased by the very displacement it itself brings on.

If the displacement be but a slight departure from
from the normal condition, and if symptoms are not marked, we may first try non-mechanical measures, or a pessary can be used tentatively and removed if it causes irritation or no improvement.

As a rule, whatever may be done the uterus must be replaced and retained in position by a pessary.
Actions of Resins

A. Non-Mechanical { Chemical
B. Mechanical

A. Non-Mechanical
   1) Chemical - gelatin, gum, mucin, starch, or imitation
      a) local - at site of contact
      b) diffuse - spread by mucous or organ
   2) Chemical
      a) local
      b) diffuse

B. Mechanical
   1. Premise { Chemical - chiefly pectin, gummy  
      Gelatin - fluid, mucin, glycogen
   2. Support { Chemical

Some resins have combined actions...
The Mechanism of Pessaries in Displacements.

Various questions arise in this connection.

1. What process must the uterus undergo in order to become restored to its normal condition, and what would be the rationale of it?

2. How are pessaries retained in situ?
   What are their seats of support and whence do they take their purchase?

3. Does a pessary merely keep the uterus in position after reposition (Static Action) or is it able to effect replacement itself to some extent (Kinetic Action)? - e.g., after displacements within normal limits, e.g., walking, etc.

4. If the pessary has kinetic action how is its movement determined?

5. What are the various mode of action in correcting displacements?

**Question 1.** The process of return or replacement is simply the reverse of that of displacement or departure from its correct position. In the case
case of prolapse there is no resistance to its rising further than its increased weight. In the process of unversion as in that of version the uterus may constitute a lever of the first kind, the fulcrum being in the middle between the Power and the Weight, the body of the uterus being considered as the Weight and Power acting at the cervix.

On the other hand it may constitute a lever of the second or third kinds, that is both the Weight and the Power being on the same side of the fulcrum. The body is considered as the Weight and in this case the Power acts also on the body. The cervix in this case does not form part of the lever proper but moves along with it.

In answer to Question 2, we may say that the approach of the posterior vaginal to the horizontal helps to support the pessary. Moreover it is squeezed between the pubic and sacral segments by the natural tendency to contract between them.

When the pessary is considered to possess the kinetic function of leverage its fulcrum is
is constituted by the inner surface of the plane of the levator ani. It sometimes takes its support from behind the symphysis pubis, but this should be avoided if possible on account of its contiguity to the neck of the bladder.

The posterior wall is also used to take purchase from in the Special Anteversion Pessaries. Zwanck's and its class are supported by the inner surface of the ischia. Others occupy the upper part of the vagina and the walls may close in below them. In Emmet's "Corrugated" Pessaries folds of tissue get buttoned in the openings and so the pessary becomes engaged.

Others have external supports

**Question 3.** Some answer that all we may expect from a pessary is to remain stationary as far as its relation to the surface it lies in contact with is concerned. Of course the pessary moves from house to house with its wearer; also when the bladder is emptied perhaps, but they say that its immediate relations are maintained. Such continuous contact would however be deleterious. According to them
them therefore, it only exercises a Static function. Others however say that alternating at longer or shorter intervals with this it exercises kinetic function. According to these the instrument has the power of ceasing to act in part or "standing at ease" when its full action is not required, for example, when a person is in the recumbent position. When however this full action is required they automatically exert their kinetic function. They thus allow a certain amount of displacement within normal limits and continuous contact with the same part is avoided. This kinetic else action may be a mere sliding or tilting, that is, lever action.

**Question 4. That of Kinetic Action.**

We have said that it may be either a sliding action or leverage. We add that it may be both.

**A. Sliding Action.**

This means that the pessary, say a flat one, lying in the axis of the vagina and posterior cul de sac can be made to move in an inward and outward direction alternately. If the force be at the
the inner end the outer end will change its relation to the surface with which it lies in contact. This happens when the patient assumes the erect posture as in that case there is more outward (or forward) pressure on the inner end. It becomes thus more effective for the prolapse. When the patient resumes the recumbent posture the outward (or forward) pressure on the upper end is lessened and the pessary returns. The change in relation or movement may be not in the pessary but in the mucous surface being drawn outwards or inwards with the movements of the body. It seems to me that when the body is bent back the anterior vaginal wall must be drawn outwards in virtue of its continuity with the skin of the abdomen which is then made tense. Bending of the body forward again would relax the skin of the abdomen and the anterior vaginal wall would be drawn inwards on account of its elasticity. In either case the pessary and mucous surface change their relations.

B. Leverage.
We shall still keep in mind a flat pessary lying in
in the posterior cul de sac and the axis of the vagina. Its fulcrum would be the prominence of the posterior vaginal wall at the plane of the levator ani, or practically speaking at the bottom of the posterior cul de sac.

If the Power (usually regarded as the recoil of the anterior vaginal wall against the posterior, therefore downward and backward in direction) be applied in a downward and backward direction to the pubic end, the sacral end will move forward and upward as the line of action against Weight or resistance is parallel to that of the Power.

The effect by acting on the posterior cul de sac will certainly be to draw the cervix upwards, but we fail to see how it could be drawn backwards. The point of the pessary is carried forwards, therefore nearer to the cervix. How then can it drag back the cervix? The tightening is secured solely by the upward movement of the bar and is lessened by the point of the instrument moving forwards.

Let us take a Hodge pessary as an illustration of a curved lever.

The two arms of the lever are unequal as the
the fulcrum is nearer to the upper end,
As the arms are curved greater length of material
must not deceive us as to consequent greater advantage.
The real length of the arm of a curved lever should
be taken as a straight line from the fulcrum, but
not of necessity to the point of the arm, but to a
line drawn at a right angle to the direction of the
action of the Power or Weight. Neither does the
direction or degree of the curve determine the line
of action. It simply determines the point of
application of the Power or Weight. Allowing for
these possible fallacies however we do not deny
that the true inner arm of the lever is shorter
than the true outer arm of it and therefore the
Power or Weight at the inner end may be under a
disadvantage. Its action corresponds precisely
to that of the flat pessary.
We therefore not only conclude that this tilting
would be ineffective in treating retroversions, but
would lessen the benefit in prolapse, in so far as
the cul de sac would be slackened rather than
tightened by it. It is true that it would be less
harmful the further backwards the point was
was situated, but however far backwards it could not remedy introversion, but rather the reverse.
Mechanism of Pessaries in Prolapse Proper.

A. Static Actions: keeping uterus stationary.

1. Pessary under Cervix: acting as a prop.
2. Pessary under fornix: indirect action
   (cul de sacs tense):
   cervix (and therefore whole organ)
   kept slung or suspended upwards.
3. Pessary under body: acting as a prop.
   Allied to simple propping is blocking or plugging of the hernial canal.

B. Kinetic Action: elevating uterus.

Sliding movements theoretically possible: dependent on the organ and on elasticity of both vaginal walls; not vice versa

a. Slide or are pushed downwards when erect posture assumed.
b. Slide or are pushed upwards when recumbent posture assumed.

Examples:

1. Disc and Stem
2. Ring
3. Packing of Marine Lint.
Treatment of Prolapsus Uteri.

Occasional attendant Pathological conditions:

1. Cystocele
2. Rectocele
3. Enterocoele
4. Enlargement of uterus
5. Elongation of cervix
6. Pelvic congestion
7. Ulcerations, erosions, excoriations
8. Relaxation, softening, stretching, weakening of the ligaments

The best method of procedure is in the first place to reduce the hernial mass and afterwards to take steps to retain and concurrently to treat the associated conditions.

The chief indications for treating the associated conditions are to lessen the size and weight of the uterus, to diminish tension on the ligaments, to allow the ulcerations, erosions and excoriations to heal and to remove any tenderness.

The means at our disposal for carrying these out are
are 1. Mechanical Supports
2. Rest in the horizontal posture
3. Antiphlogistics, deobstruents, astringents, curetting
4. Amputation of cervix if necessary.

**Mechanical Supports.**

In some cases the mere recumbent position is sufficient to keep the uterus *in situ* during treatment, but mechanical supports are usually necessary, and are sometimes effectual to relieve the associated conditions even without special antiphlogistic treatment. More especially when the patient gets up and goes about are they needed, otherwise the organ descends again, the congestion returns and all the good of her few weeks' rest is undone in a few days.

We have already discussed the mechanism and modes of action of these.

**Temporary Supports.**

We have fully gone into the different kinds of these, their mechanism, their drawbacks, their advantages, rules and directions for their use, and the indications
indications for their use.

We may say here however, that they can be usually tolerated when others cannot: also that they can be medicated; they may be retained sometimes when other forms fail and they are comparatively safe.

They should never be made of sponge.

As they are so perishable it would be very troublesome if not impracticable to go on with these for any length of time, as they require such frequent removal and perhaps the assistance of a doctor or nurse.

Accordingly when these have fulfilled their functions we proceed to select a more durable form

So-called "Permanent" Supports.

Hard and soft Rounded Pessaries.

The ball may be tried in its several forms, globular, egg-shaped, flat circular, flat oval, etc.

Opinions as to the value of this variety are very contradictory. The fact is however, that those who condemn it in theory are driven to use it, and in many cases it is of undoubted value, especially in elderly women.

The Air-ball is more easily tolerated in tender conditions. Napier says it is useful especially when prolapse is a prominent feature and the descent recent.
conditions.

In many cases the Ring gives satisfactory results. When there is a marked degree of cystocele the ring should be filled with a perforated diaphragm. The softer varieties are of value when there is tenderness from cellulitis or when tender ovaries are prolapsed. A discoid or saucer-shaped is often better than a ring, especially if the posterior border be made thicker than the anterior.

Emmet makes much use of Home-made pessaries made from block-tin, what we might call corrugated pessaries. These may be variously modified, so as to counteract cystocele, rectocele, etc.

The Hodge pessary and in fact nearly all the so-called Retroversion pessaries may be used for prolapse, partly by supporting the uterus and partly by correcting the retroversion which almost invariably accompanies prolapse.

In the case of a Hodge, the sacral curve should be more abrupt in prolapse than for retroversion. Hodge's and its modifications may have transverse bars at their lower part to counteract cystocele.
cystocele.

There are some who say that so-called Anteversion pessaries benefit the patient not by correcting the direction of the uterus, but by supporting it at its proper level only.

If the above fail, the disc and stem may be tried. Duncan has a form.
The disc is better elongated from side to side than circular. Sir James Simpson's guttapercha Oblong Shelf pessary was the original of this. Zwanck's pessary is recommended by some, but is condemned by the majority. Godson's modification of it is an improvement.

When the above fail from want of support, for example, in lacerations or relaxation of the pelvic floor, the patient may still obtain relief by wearing an abdominal bandage in addition to the pessary. An abdominal bandage alonede does good sometimes. Or in addition it may support a suspensory bandage used either to keep a perineal pad in place, or perineal pad with pessary or pessary alone.
alone.

Further means are the Cup and Stem with external supports. A curved (e.g., Cottle's) stem would counteract the usually accompanying retroversion better. The red rubber form is more suitable where there is tenderness or endometritis.

In some cases we have to return to the "Temporary Supports" after all. Marine lint is the best kind.

When the Procidentia is irreducible, a Suspensory Bandage may be the only available means of treatment. This in some cases may not only support the displaced mass, but may diminish its size by gradual pressure.

We must remember that sometimes the patient feels less discomfort when the procidentia is left unreduced, and occasionally urgent symptoms are relieved by a partial becoming a complete procidentia.

In bad cases where all other means fail to give relief the choice must be made between being bed-ridden and operation.

Even when the operator takes the case in hand,
hand, treatment by pessaries is not necessarily at an end. For the surgeon may only succeed in making the parts more fitted to retain a pessary.

**Indications for Operation.**

1. When all pessaries, even those supported externally, fail to retain the prolapse.

2. When a multiplicity of arrangements, even though they may succeed in their object, are required.

3. Where cure is likely to follow operation.

4. When more lasting or effectual relief is likely to follow operation.

5. When the condition is getting worse, e.g., the vagina becoming more and more dilated.

6. When there is danger of strangulation of the folds of tissue in the fenestrae of a pessary.

7. When there is laceration of the pelvic floor or great relaxation giving rise to the above conditions.
Mechanism of Pessaries in Retroversion Proper.

A. Static actions: keeping uterus un-retroverted.
   1. Pessary in anterior cul de sac.
      Action on cervix: contact action: acts as a barrier: cervix kept pressed back.
   2. Pessary in posterior cul de sac.
      a. Action on cervix: indirect or tether action (through the tense cul de sac), cervix kept tethered back.
      b. Action on body: contact action: acts as a prop: body kept propped or pressed upwards.

B. Kinetic actions: un-retroverting uterus

Sliding movements dependent on movements of the organ and elasticity of vagina, not vice versa.

   a. Slide or are pushed forward when erect posture assumed.
   b. Slide or are pushed backwards when recumbent posture assumed.

Examples:

   1. Cotton tampon in anterior cul de sac.
   2. a. Hodge's in posterior cul de sac.
      b. Thomas' Retrof.
Hart and Barbour have made the following observations.

**Digital Pressure in the Fornices.**

1. **Posterior Fornix**
   
   Posterior well elongated, cervix drawn back and uterus, if anteverted, becomes more so.

2. **Interior Fornix.**

   Uterus becomes elevated and slightly rotated backwards because the fornxix is pulled forwards.
   
   By pressure on these fornices therefore, they add, we act on the body of the uterus only indirectly, through its union with the cervix.

They deny any kinetic or leverage action and say the pessary acts by giving a point d'appui to the posterior fornix.

This seems to be the rational explanation and the leverage theory is fallacious as we attempted to show on page 30.

Professor Simpson says we must regard the pessary as a splint—it adapts itself to the long diameter of the uterus.

Hart and Barbour deny that a Hodge (and presumably all the supposed levers) acts as a lever; that is,
is, intra-abdominal pressure (increased by inspiration and expulsive effort) acts nearly equally on both bars.

Groom says that when adhesions are present a Hodge tends gradually to stretch them. He believes in the kinetic action of tilting, and says that pressure of the anterior vaginal wall is increased during each inspiration.

Galabin says that the same pressure is greatly increased during any expulsive efforts; also that the leverage action is more effective when the patient is up and about than when confined to bed.

However the leverage theory is altogether erroneous.

Another action of pessaries in Retroversion Proper is contact action on the cervix: placed in the anterior fornix they act as barriers to the forward movement of the cervix.

Temporary supports are sometimes used this way.
Treatment of Backward Displacements.

The supplementary treatment should be carried out on the same lines as were described for Prolapse of the Uterus (p. ).

In some cases after reposition alone or reposition followed by temporary supports for a time, the organ will maintain its proper situation without the use of so-called "permanent" supports.

Usually however it sooner or later returns to its abnormal position and in many cases the retroversion is reproduced almost immediately on the withdrawal of the sound or of the replacing fingers.

The Special treatment of Retroflexion was discussed on page 7.

The Mechanism of pessaries in Retroversion proper is described on page 7.

Temporary Supports.

These are of the same nature as were described for Prolapse. They are to be applied in the anterior vault so as to act as barriers to prevent the
the cervix coming forwards and so the fundus is prevented from going backwards.

For Continued Use.

A simple Ring will sometimes suffice and the rubber air disk is indicated when there is tenderness from cellulitis.

The upper part of the ring should be behind the cervix thus making the posterior cul de sac tense and keeping the cervix tethered back, besides perhaps pressing the fundus back.

Better still is Hodge’s or Albert Smith’s. Between the lateral bars of these the cervix hangs free; their sacral extremity need not point so much forwards as for Prolapse but the curve may be longer. Care should be taken that the upper limb is not caught in the angle of flexion, and so only support without straightening the organ.

In some cases Thomas’ or Prochownik’s is better, because the upper bar is thickened and so gives better support and is more easily borne, as in the case of tender ovaries prolapsed. Where the uterosacral ligaments are greatly relaxed Schultze’s Fig. of 8
8 or his sleigh pessary may become necessary (Prof. Simpson) the upper loop embracing the cervix.

The open lever (horseshoe) modification of Hodge’s, and Greenhalgh’s resemble each other in not pressing on the urethra.

A Hodge’s with transverse bars on its lower part may be used if the anterior vaginal walls tend to sink down.

Sir James Simpson used his loop (resembling a horse collar) of guttapercha before Hodge’s was introduced.

Galabin has a lever pessary for Retroversion. It takes its support from above the pubic arch and there forms a pouch. Thus escape is prevented without assistance from perineal body. Such a pouch formed artificially cannot however be beneficial. The inventor believes Retroflexion can be rendered by it by direct elevation of the uterus.

Cutler’s Retroflexion pessary has an external support in the form of a band passing upwards to a waist belt from behind. This is useful when others fail on account of a poor cul de sac or the vaginal walls being too lax to take a grasp on it. It is
is however liable to communicate shock to the uterus.

Sir James Simpson, adopting the suggestion of Dr Moir, occasionally used sponge or tangle tents for obstinate Retraction more especially when complicated with Hypertrophy. We should say here that he used to distinguish between Retraction and Retroflexion, but regarded the former as a flexion at the upper extremity of the vaginal tube. After the introduction of the tent into the uterine cavity, the organ becomes at once straight and expanded and is more likely, on contracting, to retain its proper situation; or if a recurrence is feared, it may be made to contract on a stem pessary passed into its interior. He adds "we see cure of Retraction occurring subsequently to a confinement or miscarriage, where the position of the uterus is attended to, and the patient kept at rest; and the temporary enlargement of the uterus by means of the tent, and its subsequent involution is thus an imitation of nature's only and but too rare method of rectifying the retroverted uterus."

**Indications for Operation.**

Prof. Simpson says:
says:

Such procedures should be reserved for cases where the Retroversion is complicated with some other condition, such as displacement or disease of the ovaries, which aggravates the patient's distress and forbids the relief that can ordinarily be afforded by properly adjusted pessaries.
Anteversion and Anteflexion Pessaries in General.

The upper end of these pessaries occupies the anterior cul de sac.

Numerous anteversion pessaries have been devised by Thomas and others on the principle of attaching a moveable or elastic bow to a Hodge's pessary as basis.

Mechanism. Like pessaries for retroversions, they have a double action— that is direct and indirect. They may also have a double function kinetic and static.

1. The anterior cul de sac is kept stretched, and so indirectly
   a. The cervix is kept slung or suspended.
   b. The cervix is kept tethered forwards.

2. The pessary acts by direct contact
   a. The body of uterus is kept pressed forwards.
   b. The body of uterus is kept pressed upwards or propped.

The above are static functions.

They may also have the corresponding kinetic functions, that is, they may— restore the uterus
uterus to the above positions after temporary displacement.

The kinetic and static functions may alternate according to the bodily movements and exercise of functions. They take their purchase upon posterior vaginal wall to make pressure on the anterior vaginal wall.

Drawbacks.

1. Base of bladder appears more vulnerable to injury from pressure than the posterior cul de sac.

2. By making direct pressure on the anterior wall of the uterus which is often the chief seat of disease and very tender, they sometimes prove a source of irritation.

3. These pessaries adapt themselves less naturally than Hodge's.

4. By occupying mainly the lower part of the canal, they are an obstacle to coitus, and

5. on that account are liable to displacements.

Rules.

1. They should be only used tentatively and
and continued only if they actually give relief.

2. They require careful watching.

**Indications and Uses.**

1. Anteversions.

2. Likely to be useful when irritability of the bladder is associated with marked anteversion.
Mechanism of Pessaries in Anteversion Proper.

A. Static actions: keeping uterus un-anteverted.

1. Pessary in posterior cul de sac.
   Action on cervix: contact action: acts as a barrier: cervix kept pressed forwards.

2. Pessary in anterior cul de sac.
   a. Action on cervix: indirect action (through the tense cul de sac) cervix kept tethered forwards.
   b. Action on body: contact action: acts as a prop: body kept propped or pressed upwards.

B. Kinetic actions.

Sliding movements dependent on movements of the organ and elasticity of both vaginal walls, not vice versa.

a. Slide or are pushed backward when erect posture assumed.

b. Slide or are pushed forwards when recumbent posture assumed.

Examples:

1. Cotton tampon in posterior cul de sac

2. a. Ring in anterior cul de sac
   b. Hewitt's Cradle
Treatment of Anterior Displacements.

An idea of the supplementary treatment can be had from that described for Prolapse of the Uterus on page.

Professor Simpson says that for a large proportion of cases there is no call for mechanical treatment.

Anteflexion is normal in the infantile uterus, but the uterus should become more erect as she grows older.

Hart and Barbour say that Anteversion is always a symptom of Chronic Metritis. They also say that pessaries are no good for Anteversion as such, but only in so far as they support the uterus.

From this we gather not that it is impossible to un-vert the organ (For they say that digital pressure in the anterior fornix causes the uterus to rotate backwards slightly) but that the version as such causes no symptoms. They thus agree with Emmet who says that no degree of Anteversion without prolapse produces disturbance. Whatever the explanation be, there are some cases as Professor Simpson says where no relief can be obtained without mechanical support.

The special treatment of Anteflexion has been described on page.
Treatment of Anteversion Proper.

The Mechanism of Pessaries in Anteversion proper is described on page

Temporary Supports.
These are of the same nature as were described for Prolapse. They are to be applied in the posterior vault so as to act as barriers to the cervix moving backwards and so the fundus is prevented from going forwards.

For Continued Use.
A Ring may be used. If the organ is expected to un-vert or un-flex it should be placed in the anterior fornix. If it is hoped only to support the organ it may be placed in either fornix. The rubber air-disk is useful where there is tenderness from cellulitis.

Paradoxical as it may appear, Schultze's figure of O, Hodge's and other Retroversion pessaries (placed in the posterior cul de sac) are sometimes of value, even although the Anteversion would tend to be increased. This is explained by their action in
in counteracting Prolapse and thus relieving some of the pressure symptoms (Professor Simpson).

The same explanation applies to the use of the ring when placed in the posterior fornix.

Calabin also recognises their value in Anteversion associated with congestion and includes his own Lever pessary in the number. He also adds limitation of mobility to the explanations of their usefulness. This is true as far as it prevents forward movement of the body.

**Special Anteversion Pessaries.**

Numerous anteversion pessaries have been devised by Thomas and others on the principle of attaching a moveable or elastic bow to a Hodge's pessary as basis.

Their Drawbacks are fully given on page They have their drawbacks but these have been exaggerated. Some deny that they have any influence on Anteversion proper, but this view cannot be upheld. These persons attribute any value they may possess to their effect on Prolapse.

Most of them interfere with marital intercourse.
intercourse. On this account Galabin has devised his Anteversion pessary.

Professor Simpson in one of his cases found a pessary successful which was bivalved, with a notch on the anterior one to support the body of the uterus.

An abdominal bandage with or without a suprapubic pad is useful in some cases of Anteversion with or without abdominal laxity or hyperaemia.

Professor Simpson in the above case had previously tried a sponge-tent inserted into the cavity of the uterus; a plan which had been suggested by Moir and found useful in cases of obstinate Retroversion more especially when complicated with Hypertrophy. It was however not successful in this case.
Treatment of Lateral Deviations.

They are usually subsidiary phenomena and of relatively small clinical importance. (Prof. Simpson).

Hewitt's Cradle Pessary is sometimes provided with "crutches" to prevent lateral displacement.

Shortening of one broad Ligament from Cellulitis.

The same principle is applicable to anterior and posterior cellulitis.

A glycerine plug or rubber disc or a Hodge pessary with the sacral end bent sideways so as only to occupy that half at the posterior cul de sac lying under the healthy broad ligament.

Mechanism.

1. Curative—by relieving in part the shortened ligament which on account of its shortening supports more than its share of weight. It is thus allowed to recover and to be restored to its proper length.

2. Preventive—acting as a "crutch" under the healthy ligament preventing the drag on it, by the opposite one, and thus preventing its becoming inflamed.
Mechanism of Pessaries for Flexion Proper.

Hart and Barbour have made the following observations (p. 91).

Effect of Digital Pressure in the Posterior Fornix.

1. If uterus is retroflexed, the flexion is not remedied.

2. If the fundus is fixed, the retroflexion is increased as the cervix is drawn back while the fundus remains.

3. If the uterus is not very much retroverted, we cannot act on it directly.

Effect of Digital Pressure in the Anterior Fornix.

1. If uterus is anteflexed, the flexion is not diminished.

2. (Presumably anteflexion increased).

3. If the uterus is not very much anteverted, we cannot act on it directly.

Consequently, they say, no vaginal pessary can undo the flexion of a retroflexed or anteflexed uterus.

The absoluteness of this dictum is however shaken by the following considerations

1. They themselves allow that direct contact of the fingers or pessary with the body may be made if the organ be very much retro- or anteverted (No. 3 above). If then the cervix were
were fixed would not pressure by fingers or pessary un-flex the organ to a certain degree?

2. Again, they say that the effect of the finger in posterior fornix, the fundus being fixed, was to draw cervix backward. This is no doubt true in some cases, but a more or less bulky pessary, e.g., Thomas’ or More Madden’s Roller Pessary would keep the cervix forward and thus the flexion would be relieved.

3. Again, in another place they say "When the angle of flexion is flaccid, the body is move-able on the cervix. Here a Hodge’s, which acts on the body through the cervix does no good.

From this statement alone their statement about a vaginal pessary and flexions can be refuted, for if the angle be flaccid, a pessary acting on the cervix could straighten it.

It may be true that the position of the fundus does not change, but at the same time the loose axis of the organ is made straighter if the cervix is drawn in the right direction.
Theoretical Actions of Pessaries in Retroflexion Proper.

The same would be applicable to Anteflexion Proper, mutanda mutandis.

It seems to me that everything turns on

1. Whether the angle of flexion is rigid or more or less yielding, and

2. whether the fundus or cervix is fixed.

A. If the angle is rigid, then no pessary can have the effect of un-flexing it, and if a pessary will have any effect at all, it will be to draw the cervix back.

The mechanism would be the same as in Retrversion proper.

B. If the angle is more or less yielding again, either the fundus or the cervix must be or be made more fixed than the other before un-flexion can occur, to allow a force to tell on the less fixed end.

1. Nature sometimes fixes the fundus. In this case there would be two ways of causing a un-flexion. The one, would be to place a more or less bulky pessary, e.g., Thomas' Retroflexion in the posterior cul de sac to keep the cervix
cervix pressed forwards (acting as a barrier).

b The other to place a pessary in the anterior fornix to make the cul de sac tense and keep the cervix tethered forward. Here we would get the paradox of an Antorsion pessary relieving retroflexion.

2. Nature sometimes fixes the cervix. In that case flexion might theoretically be reduced by placing a pessary in the posterior cul de sac to exert direct pressure on the body, e.g., Thomas' Retroflexion pessary.

3. Sometimes however neither of the ends is fixed by Nature. A pessary could be fitted perhaps to fix the cervix, and then one might trust to some force in the pelvis or abdomen to tell on the fundus and cause un-flexion. The most likely would be the viscera getting behind it and pressing it forwards. In order that they may get behind it, the cervix should be fixed backwards.

a This might be done by placing a bulky pessary (barrier) in front of the cervix and keeping it pressed back. Here again an Antorsion pessary would be indicated.
indicated.

Or on the other hand we might act on the fundus by means of a pessary placed in the posterior cul de sac. This would exert direct pressure. This pessary might at the same time fix the cervix by making the cul de sac tense. Thomas' Retroflexion pessary might answer to this.

Of these theoretical actions we are inclined to consider the following practicable:-

1. **Biа**: When fundus fixed, to place a more or less bulky pessary in the posterior vault to keep the cervix forward. This might be effected by a Thomas' Retroflexion or others with bulky upper ends. Again, when the fundus was not fixed, the same instrument would act by pressing on the fundus and keeping the cervix back by making the cul de sac tense.
Theoretical Actions of Pessaries in Retroflexion Proper.

1. Fundus adherent.
   a. Pessary in posterior cul de sac: contact action: acts as a barrier: cervix kept pressed forward.

2. Cervix adherent.
   a. Pessary in posterior cul de sac: contact action: acts as a prop: fundus kept pressed up.

3. Both non-adherent.
   a. Pessary in anterior cul de sac: contact action: acts as a barrier: cervix kept pressed back.
   b. Pessary in posterior cul de sac: contact action: acts as a prop: fundus kept pressed up.

Examples:

1a. Thomas' Retroflexion Pessary: 1b. Anteversion Pessaries.

2. Thomas' Retroflexion.

3a. Anteversion Pessaries 3b. Thomas' Retroflexion
Theoretical Actions of Pessaries in Anteflexion Proper.

1. Fundus adherent.
   a. Pessary in anterior cul de sac: contact action: acts as a barrier; cervix kept pressed backward.
   b. Pessary in posterior cul de sac: indirect action: acts as a barrier; cervix kept tethered forward.

2. Cervix adherent.
   a. Pessary in cul de sac: contact action: acts as a prop; fundus kept pressed up.

3. Both non-adherent.
   a. Pessary in posterior cul de sac: contact action: acts as a barrier; cervix kept pressed forward.
   b. Pessary in anterior cul de sac: contact action: acts as a prop; fundus kept pressed up.

Examples:
1a. Hewitt's Cradle  1b. Retroversion pessaries
2. Hewitt's Cradle
Treatment of Flexion.

Galabin believes that retroflexion can be remedied by direct pressure on the body as well as the retroversion by traction on the cervix. He believes his retroflexion pessary would effect this. Both Emmet and Hart and Barbour allow that unflexion may follow the use of a Hodge pessary, but the former, as also Galabin, would attribute it to the weight of the viscera forcing the fundus forward, and the latter says it depends on intra-abdominal pressure. To this they add the state of the uterine walls. Although these opinions were expressed concerning retroflexion, they may also be applied by inference to anteflexion. Galabin says that anteversion pessaries are able to press directly on the body, but only to a certain extent. Their effect however, would probably be to un-vert the organ rather than un-flex it unless the cervix were fixed.

In many cases of flexion however, a vaginal pessary
pessary will be insufficient to straighten the organ, and benefit is to obtained by the cautious introduction of an intrauterine stem.

It should only be used if the symptoms are unrelieved by other measures.

Professor Simpson, referring to anteflexion, says that it has been found from time to time to

1. Promote the disappearance of the endometritis which attends anteflexion.

2. Remove Dysmenorrhoea, patients having menstruated without suffering.

3. Remove Sterility, women having conceived with the stem in situ.

Atthill said that the use of the stem pessary was indicated when painful menstruation existed with either a retroflexed or anteflexed uterus.

Croom says that in a great majority of cases of anteflexion recourse must be had to intrauterine pessaries. Lawrence cured a case of Dysmenorrhoea and Sterility apparently from Acute Anteflexion by means of it. (B.M. Assoc. 1888).

Discussing retroflexion Professor Simpson says that "the Amann stem does good service in keeping the
the uterus straight, and when the anterior fornix is packed with iodoform gauze or with pledgets of cotton and glycerine, the uterus is retained in position and the walls will recover their tone. When three or four periods have passed the organ may keep its place or be kept in it by the use of a vaginal pessary.

When there is endometritis or tenderness present an indiarubber pessary (e.g., Greenhalgh's) may be used. It is soft and also more easily retained, but it does not counteract flexion so well. The stem has sometimes to be supported or supplemented by the use of a vaginal pessary. For example, when the angle of flexion is flaccid, a stem, aided by a Hodge with transverse bars is suitable for some of these cases. Also when the flexion is rectified but the version remains.

Care should be taken not to fix the two pessaries together in any such fashion as to interfere with natural uterine mobility.

There are many forms to choose from. Galabin says that Thomas' keeps the uterus more effectually in retroflexion. The stem has been discussed also on page
Galabin also says that sometimes laminaria tents are useful in anteflexion, reaching nearly up to the fundus. They act by

a. Softening the walls.

b. Straightening the organ for the time being.

c. Dilating the canal.

He also says they can be used before administering an anesthetic and effecting reposition in some cases. (p. 38).
**Possible Modes of Action of Intrauterine Stems.**

1. Dilatation of cervical or whole uterine canal by increasing size every three or four days (Sir James Simpson).

2. Keeping canal patulous after dilatation by other means.

3. Straightening of the cervix or whole organ
   a. As a splint— for the time being, while the instrument in situ.
   b. A more lasting effect, same as sometimes after a confinement.

4. Cervix prevented from contracting after incision.

5. The walls of the uterus softened.

6. Remedy an impaired condition of the uterine mucous membrane which interferes with the normal changes.

7. Gentle and continued stimulation of the whole uterine system.

8. Stimulating growth of an undeveloped uterus.

9. Restoring the tonicity.

Arguments brought forward against them as a class.

(See Arguments against Stems).

Rules.
Rules.

1. Before introducing we may pass a sound once or twice to see how the uterus bears interference.

2. Should be removed every month or six weeks for cleansing of the uterus and the instrument.

3. Should have a thread attached to it in case of pain, rigors or feverishness.

4. A galvanic stem, on account of corrosion and roughening of the zinc should be removed oftener—every three weeks, then the crust removed, and it should be washed with vinegar.

5. May wear a little longer one on each occasion, provided the full length of the cavity is not reached.

6. Patient should be kept under observation.

7. Not necessary to remove at the catamenial periods.

8. External supports should be avoided if possible.

9. Vaginal supports should not be rigidly connected to the stems.

10. May be only necessary to wear for a month or two, but if borne without pain, it may be worn for four or five months.
Arguments brought forward against Intrauterine Stems.

1. That *a priori* a mucous surface covered by a cylindrical epithelium is not likely to create friction and pressure with impunity. (Galabin). We know however, that the uterus is a highly tolerant organ, and we have the testimony of experienced persons; for example, Sir James Simpson says he had used it in a great number of cases, and had never seen its use for amenorrhœa attended with any untoward results.

2. That it excites irritation and hyperplasia and not infrequently severe and even fatal metritis and peri-metritis and general peritonitis. This should not happen if the case be selected and proper precautions taken.

3. That it would increase haemorrhage, if present. Against this we have the statement that it need not be removed at the menstrual periods, for the catamenia is not much increased, if at all. (Sir James Simpson).
Simpson).

4. That it is a most irrational instrument, as being inconsistent with our present views of the Pathology of Dysmenorrhoea, flexions, etc. (Emmet). These views are not established by any means.

5. That no permanent benefit is obtained, that as soon as the instrument is removed, the organ will return to its original condition. Also that as the cause of the Dysmenorrhoea is not removed, even if the canal remains straight and patulous, the condition is rather increased by the new disturbance.

This is purely theoretical and fallacious and is not borne out in practice. Further, temporary benefit is not to be despised.

6. It certainly does cause pain at first, but this passes off as the patient continues to wear it.

7. It also gives rise to pain and irritation of the raw lips of the wound after incision of the cervix. Also the risk is greater after the operation, and some prefer keeping the wound open by the use of the fingers occasionally.
occasionally. Nevertheless some authorities recommended as Barnes and Sims have its use.

8. That it takes a length of time for the cure to take place and takes up a great deal of the surgeon's time. This is true.

9. That relapse of the condition is very apt to take place. This does sometimes occur.

10. That it is apt to cause ulceration and to press against the anterior or posterior wall of the vagina. These can be avoided by proper care and help of a vaginal tampon or pessary.

11. Emmet bases his objection to it in cases of flexion on the theory that there is present a condition resembling inflammation. The stem however, may be indicated to remove a congested condition caused by the flexion.

12. It has been said that they increase endometritis when present. In some cases it has been found on the other hand to promote the disappearance of the endometritis which attends anteflexion. (Professor Simpson).
The Treatment of Stenosis.

In the works included in the Hippocratic writings (mostly attributed to Hippocrates, the Father of Medicine, who lived about 2,500 years ago) in the 13th section of the Πυελικήν Πελτών bougies and leaden instruments are directed to be used for opening up a contracted uterine orifice for sterility.

Sponge tents were used by Philip Barrow in 1539. According to Sir James Simpson they are mentioned along with gentian root and medulla sambuci under the name of pessaries in "Glausura Uteri" by Roonhuyse in 1676 as dilators of the os uteri preliminary to inserting silver, ivory or horn instruments, these latter being hollow and pervious, for the cure of dysmenorrhoea or that "the womb may be made to have its due purgations."

Macintosh used straight metallic sounds or bougies of different degrees of thickness— from a small one the size of a probe to one the size of a No. 13 urethra bougie or larger, a larger size being inserted daily.

These latter however were not left in situ and therefore cannot be called pessaries in our sense of
of the word.

This method however was very irksome and tedious, though often successful. Sir James Simpson therefore tried several other methods. We shall only mention these where the instruments were left in situ.

He tried "permanent" intrauterine bougies, sounds or stems. These were left in the canal for days and weeks. A larger size was passed every 3 or 4 days and left there. He was successful in many cases with these. These however although more rapid in their effect than the method of Macintosh, yet took a great length of time to effect a cure.

He therefore made use of sponge tents, by means of which the canal can be opened in 20 or 30 hours. But relapse was apt to follow these methods. He therefore discarded them for Incision of Cervix, thus bringing the uterus—as he said—to the condition of one that has contained an impregnated ovum.

He still used sponge tents or intrauterine bougies after the operation to prevent contraction, but as these caused pain and irritation he used the fingers occasionally instead.

Galabin says that the degree of risk which always
always attends a stem is greater after incision of cervix than at other times. It was however recommended by Barnes and Sims. Barnes in 1888 (B.M. Assoc.) however said it was unnecessary after Peaslee's operation of Dissection which he recommended.

The stem may also be worn for a few periods after dilatation.

Atthill recommended Sir James Simpson's operation, nevertheless he allowed the galvanic pessary did marked good in a case of dysmenorrhoea while the patient was using it, and says it may be tried before operation.

Galabin attributes dysmenorrhoea to Stenosis of the os and recommends dilatation by a laminaria tent (p.60).
Methods of Dilatation.

The following instruments are left in situ in the present day to produce dilatation.
Intrauterine stems, sponge, tangle and tupelo tents, graduated bougies.
Porak uses decalcified ivory and gentian root.
Antiseptic wool and gauze are also sometimes used.

The following gives us a fair idea of the methods of dilating the cervix preferred by different gynecologists in the present day.

Discussion at a Meeting of British Medical Association held at Glasgow, August 20, 1888.

CROOM: Dilator or graduated bougies to destroy spasm and relieve uterine congestion in Dysmenorrhoea when the congestion is confined to the uterus proper, say in a case of acute version or flexion.

BARNES: Peaslee's Discission (Partial Incision): Not necessary to use stems after.

DUKE: For Obstructive Dysmenorrhoea Dilatation, but did not specify the means. Dysmenorrhoea, but not
not because obstructive but allowing use of curette.

STEPHENSON: Bougies for Dysmenorrhoea when obstructive (only seldom).

BYERS: Dilatation, but did not specify the means. Often successful in Dysmenorrhoea, seldom in Sterility. Objected to rapid dilatation: preferred sponge tent.

LAWRENCE: A case of Dysmenorrhoea and Sterility apparently from Acute Anteflexion. Stem used, both conditions cured.

REID: Dilatation, but did not specify the means. In Dysmenorrhœa (because obstructive). In Sterility (Alterative effect).

HEYWOOD SMITH: Incision and dilatation combined. In Dysmenorrhœa, which he considers obstructive.

MORE MADDEN: Dilatation and incision. In Dysmenorrhœa and Sterility which are usually obstructive.

ROUTH: Dilatation and stem afterwards for a few periods. For Obstructive Dysmenorrhœa, but rare.

PARVIN: Rapid Dilatation. Dysmenorrhœa, but not because obstructive. (For incomplete abortion or removal of an intrauterine
intrauterine growth he preferred Hegar's dilators or sponge tents.

REID: (For incomplete abortion preferred dilatation by fingers).

(I may be allowed to say that this last is the only method that I have had occasion to use in incomplete abortion and with success.)
Rationale of Pessaries in Dysmenorrhoea and Sterility.

Most authorities agree that they are of value in a proportion of cases, both of dysmenorrhoea and sterility, the proportion being however less in the case of the latter.

There are various theories as to the Rationale:

1. That they act by removing some obstruction to the escape of the menstrual discharge or to the upward passage of the spermatozoa.

2. Allied to this we have the theory (of Sir James Simpson) that in dysmenorrhoea they act by enlarging an outlet which may be of normal size, but where the fluid is secreted too rapidly in proportion and where it may contain coagula or fibrin.

3. That they act by reducing congestion or hyperaemia of the endometrium.

4. That they have some influence on the structure of the uterus which is not understood, but may be called an alternative action.

5. That in dysmenorrhoea they simply relieve the
the pain by destroying spasm of the os internum or by nerve-stretching, with or without local tenderness being present. This is analogous to stretching of the sphincter ani in anal fissure. (Parvin).

6. That its action is subservient to other measures. It gives us room to use the curette etc. (Duke). Duke also says that it is of value in allowing exit of unhealthy discharges. He thus seems to grant the presence of some obstruction.

7. That the action is illusory, the only real benefit arising from the supplementary treatment, such as the use of the hot douches, purgation, etc.
THOERY I. The Obstructive Theory of Dysmenorrhoea and Sterility.

As to Theory I. in relation to dysmenorrhoea we should remember that it has been calculated that in ordinary menstruation it is only necessary for one drop to pass in the space of three minutes (Farvin), so that a very small opening is required for its passage. At the same time we must remember that the canal is a closed conduit and its walls may be rigid so that the effect of gravity or the ordinary means that affect its flow may be insufficient with the result that a painful contraction is needed. We know also that a bend in a soft tube may occlude its lumen entirely. It is objected by some that the pain of dysmenorrhoea never resembles labour pains, but clinical experience proves different.

As to the question of sterility in relation to this theory, we must remember that it is not a question whether a certain single spermatozoon can reach its destination or not. It is self-propelling and when it has gone inside the os externum it will probably feel its way and creep along until it has
has reached the interior of the uterus, and it is inconceivable that the canal may be so occluded as to resist its passage.

The question is what are the chances of its getting into the os externum to start with.

If a crowd of blind men faced a park surrounded by a fence and marched straight ahead, only the few that happened to be opposite the opening would get in, and the narrower the opening the fewer would enter. One or two might be able to find the opening by feeling along the fence, but they are as likely to go further from the gate as to approach it.

So we say, only those spermatozoa that find themselves in the opening of the os externum will be able to ascend and the smaller the opening, the fewer will find themselves in it.

Therefore stenosis of the os externum is not an absolute bar to conception, but diminishes the chances greatly.

More Madden explains the presence of sterility in Acute Anteflexion to the fact that the os externum is lifted out of the posterior cul de sac which contains the semen. Normally in the supine position
position he says that the os lies in the cul de sac. In retroflexion the position would be unchanged. He also considers obstruction to be the most common cause of dysmenorrhoea. Therefore he says the displacement, flexion or stenosis has to be remedied.

Sir James Simpson (Clinical Lectures, p.248) quotes Dr Macintosh as follows:-

"In twenty women (suffering from dysmenorrhoea) eighteen cures have taken place, and of the ten married ones seven have since had children."

The treatment was by graduated bougies. The above is strong presumptive evidence in favour of the obstructive theory. As to sterility he does not tell us in so many words whether any of these cases were previously barren or not, and therefore we cannot judge of their benefit in sterility.

Professor Simpson says the use of a stem in anteflexion has been found from time to time to

1. Remove dysmenorrhoea and
2. remove sterility, women having conceived with the stem in situ.

It is difficult to judge whether this can be regarded
regarded as an argument for or against the obstructive theory. It is true that the instrument straightens and dilates the canal and in so far removes obstruction, but on the other hand it might be expected to block up the canal by filling the lumen.

Yet we know that it is not necessary to remove stem pessaries at the periods, and as stated above women have conceived with the stem in situ.

It shows at any rate that very little space is needed for the passage of the menstrual secretion and of spermatozoa.

Galabin attributes dysmenorrhea to stenosis of the os in some cases.

Atthill recommended Sir James Simpson's operation but said it failed to cure sterility and was only useful for dysmenorrhea. This would be a presumption against obstructive sterility and for obstructive dysmenorrhea. In the same way he recommends the stem for dysmenorrhea with retroflexion or anteflexion.
THEORY II.

This theory is partly true but is not to be substituted for Theory I. Such rapid secretion as to cause Dysmenorrhoea in an os of normal size or larger would mean Menorrhagia, which does not always accompany Dysmenorrhoea.

THEORY III.

Croom ( ) says that this is the main cause of Dysmenorrhoea and is also one of the causes of Sterility. He traces this congestion to various causes, among them being the rheumatic or gouty diatheses. He says it may also be caused by Flexion of the uterus.

Thus we see that according to him both Dysmenorrhoea and Sterility may ultimately be traced to Flexion.

According to this theory the pain of Dysmenorrhoea is analogous to that of chordee, that is, non-resistance of the tissue to Hyperaemia at the menstrual periods. (Or rather Hyper-hyperaemia, as there was hyperaemia before). There is also Hyperaesthesia. The Sterility is accounted for by the congested mucous membrane forming a bad nidus for gestation.
According to this theory Dysmenorrhea and Sterility are due to the imperfect performance of function from an impaired condition of the endometrium or by an imperfectly developed uterus.

This theory is not of much value as it does not tell us how pessaries are of use in these symptoms of the condition more than in others.

Emmet gives the above explanation of Dysmenorrhea. Some of these 'alternative' effects are softening of the uterus, absorption of inflammatory deposits, stimulation of growth, hastening disintegration of the mucous membrane.

This theory implies that the pain of Dysmenorrhea is due to spasm of the os internum. This only accounts for a small proportion of cases.

THEORIES VI. and VII do not explain the action in cases where these further measures are not used.
used.

Theory V. may however account for a case recorded by Macintosh where there were Dysmenorrhoic pains without any Menstrual secretion.
The following gives the opinion of other present-day Gynecologists.

Discussion at a Meeting of British Medical Association, held in Glasgow, August 1888.

GROOM: Did not believe in Obstructive Dysmenorrhœa or Sterility.

JACKSON: (quoted) Did not believe in Obstructive Dysmenorrhœa or Sterility.

BARNES: Believed in Obstructive Dysmenorrhœa in a large proportion of cases.

DUKE: Thought that obstruction was the most common cause of Dysmenorrhœa.

STEPHENSON: Disputed the theory of obstruction.

LAWRENCE: Attributed a case of Dysmenorrhœa and Sterility to Acute Anteflexion.

WALTER: Believed in Obstructive Dysmenorrhœa and Sterility.

REID: Believed strongly in Obstructive Dysmenorrhœa but slightly or not at all in Obstructive Sterility.

HEYWOOD SMITH: Believed in Obstructive Dysmenorrhœa.
MORE MADDEN: Obstruction most common cause of both conditions.

ROUTH: Thought Obstructive Dysmenorrhea rare.

BYERS: Presumably believed in the former, but not much in the latter, for he says: "In pure cases of Dysmenorrhea with sterility dilatation would cure or relieve the majority of the former, but only a few cases of the latter."

FARVIN: Did not believe in Obstructive Dysmenorrhea in most cases.

BRAINTWAITE: Presumably believed in Obstruction, for said "Dysmenorrhea from flexions required treatment of the flexions."
**Pessaries in Dysmenorrhœa considered as not due to Displacement.**

Emmet recommends a sponge tent to be used on each of the two days previous to that on which the discharge is expected. He explains its value to be due to remedying the impaired condition of the uterine mucous membrane, disintegration being hastened.

At Meeting of the B.M. assoc. in '88 Croom said that dilatation by dilator or graduated bougies sometimes cured Dysmenorrhœa, but not because it removed obstruction, but by improving the congestion and destroying spasm of the os internum.

Duke also believed that cases of Dysmenorrhœa were cured by dilatation, but he attributed the benefit to its allowing exit of discharges and the after-use of the curette.

Parvin thought perhaps that the rationale was that of nerve-stretching or relief of local inflammation. He preferred rapid dilatation.
Pessaries in Sterility considered as not due to Displacement.

At the above Meeting Croom appears to me to have been a little inconsistent.

1. He said that the association of Dysmenorrhœa and Sterility was in many cases accidental. He had said before that Dysmenorrhœa was due to Hyperœmia of the Endometrium; also that sterility was also occasionally due to the same cause, but may depend on many other "slight unrecognisable causes."

When they happen to be present together then, from his own standpoint, he cannot say that the association is "accidental."

2. He later on said that "it is certain that the cure of an Anteflexion or Retroflexion or in other words removal of apparent mechanical causes has resulted in cure of Dysmenorrhœa and sometimes Sterility; far oftener it has failed in Sterility.

Failed no doubt because they did not remove some condition other than a mere narrowing of the canal— a morbidly hyperœmic condition of
of the Endometrium rendering grafting of the ovule impossible."

How then, according to his theory, was the dysmenorrhea cured if the hyperemic condition of the endometrium had not been removed?

Reid allowed that sterility was sometimes removed by dilatation, but attributed it to a changed condition of the uterus (not removal of obstruction).
Treatment of Amenorrhœa by Pessaries.

Occasional attendant Pathological Conditions.

1. Vicarious Haemorrhages in dangerous Situations.

2. Undersized uterus.
   a. From imperfect development
   b. From atrophy or superinvolution after delivery.

3. Sympathetic conditions.

In some cases amenorrhœa still remains after indirect and constitutional treatment has been tried and even after the general health and power have been restored. Sir James Simpson likened such cases to a clock, which though duly and fully wound up, will not "go" till the pendulum is swung.

Here also a local irritation seems to be required to be superadded in order to imitate the menstrual action.

But again there are other obstinate cases of amenorrhœa connected with an undersized uterus where the local treatment is necessary from the first, for they do not seem to be dependant on the constitutional
constitutional state.

For this object local irritants have been applied to the vagina: also nitrate of silver has been applied to the cervix and certain drugs applied to the uterine cavity. Also dry-cupping the interior of the uterus, or the introduction of electrodes into it, but the treatment that concerns us at present is that by

**Intra-uterine Stem Pessaries.**

These in their various forms have been fully described. Also their mechanism gone into.

In this connection they stimulate, excite, or irritate by

a. Friction

b. Chemical action

c. Electrical action

The stimulation may be

a. Local

b. Diffused from the seat of contact.

c. reflex- on the ovaries.

Groom accounts for its value in amenorrhoea as follows:— "It does good in some cases, as does scarifications of the cervix, by permitting a temporary flow and giving a temporary relief."
relief."

The comparison only partly holds good, for the action of the pessary is not to cut or tear the blood-vessels.

Sir James Simpson explained its **rationale** in amenorrhoea associated with undersized uterus as follows:- "It acts according to the great law that all continuous and increasing irritation and expansion of the uterine walls or cavities leads to increased growth and hypertrophy in the walls of the organ. For example, a fertilised ovum, fibroid or polypus."

To see the analogy we should know that the pessaries are employed in a series of increasing length and thickness.

It is commonly allowed that the so-called "galvanic" pessaries are the more powerful, yet their effect is considered to be chemical rather than electrical.

Sir James Simpson testified that it was followed immediately by most marked results, especially in the cure of headache and other secondary symptoms (Asthma
(Asthma in one of his cases) and if worn for a sufficient length of time, did not often fail to bring on menstruation. Galabin declares it is the most powerful means of curing amenorrhœa.

Atthill also recommends it.

Galabin says it is useful in amenorrhœa with vicarious hæmorrhage in dangerous situations as well as for unrelieved menstrual

As to its safety, Sir James Simpson tells us that he never saw its use for amenorrhœa attended with any untoward results, although he had used it in a great number of cases.

He however, held he was not justified in employing it in young and unmarried persons except there was danger to health or life.

It should be carefully sterilised and applied with antiseptic precautions. (Professor Simpson).

As for other Contra-indications, Rules, etc. see
Pessaries in Enlarged Uterus.

Professor Simpson says:–

The resorption of inflammatory deposits may sometimes be favoured by the appliances that have at the same time the effect of improving the position of the uterus.

He tells us, for example, that the stem has often promoted the disappearance of the endometritis which attends anteflexion. Barbour says (Hart and Barbour p. 368, 5th Ed.) "Passive congestion is also diminished by giving local support to the uterus by a Hodge's or a soft ring." Galabin (p. 94) says "An abdominal belt and supra-pubic pad is often of value in hyperœmia even without any displacement."

Sir James Simpson recommended Moir's plan for treating cases of obstinate retroversion especially with hypertrophy.

This was the introduction of a sponge or tangle tent pessary into the uterus.

All the above means have an antiphlogistic effect but they can not be regarded as special antiphlogistic measures. As a link between them and the latter measures we have tampons of cotton soaked in
in glycerine.

For deobstruent purposes the glycerine may be medicated with ichthylol; for a more astringent action, tannin or alum will be used.

Rest may also be regarded as coming between mechanical and special antiphlogistic treatment. The latter will comprise the curette, "Application of iodine and carbolic acid to the interior, ergot and quinine internally, or such deobstruents as the iodide and bromide of potassium: the use of such waters as those of Kreuznach, Krankenheil, Ems, or Kissingen, and the use of hot and astringent douches." (Professor Simpson).
Pessaries after Incision of Cervix.

We have already considered this. p.

Pessaries for the Results of Pelvic Cellulitis.

Lateral Cellulitis has already been mentioned. p.

The position of the uterus is altered in consequence. If the inflammation is behind the uterus, place something in front of it to support the sound ligament.

Similarly when inflammation is in front or at sides.
Pessaries in Under-sized Uterus.

There are certain obstinate cases of Amenorrhoea associated with

1. Imperfect development of the uterus, or with
2. Superinvolution after delivery and atrophy.

Sir James Simpson that a series of small galvanic pessaries of increasing length and thickness were useful for these cases.

Their rationale is given on page

Pessaries in Prolapse with Elongated Cervix.

Emmet says (p. 500) that in some cases the following may be used as substitutes for amputation.

1. Frequent use of sponge tents to dilate the whole canal.
3. A galvanic stem with a vaginal pessary hinged to its disc. Mechanism - Stimulation.
4. Supports.
   a. Temporary: cotton support or rubber disc.
   b. Permanent: hard rubber pessary with a light cup of rubber for the cervix hinged to it.
Pessaries in Fibroids.

The symptoms due to the weight of the tumour may be relieved by artificial support. Thus patients with a small fibroid (e.g., in posterior vaginal wall) often derive great benefit from wearing a Hodge pessary.

The discomfort of a large abdominal tumour is materially lessened by wearing a broad flannel bandage.

When a tumour or an inflammatory swelling is present in a case where a pessary is indicated, a soft kind such as the temporary supports or air ball should be used.
Pessaries in Tender Prolapsed Ovaries.

In retractions with diseased prolapsed ovaries which aggravate the patient's distress and render the wearing of pessaries impossible, operative procedures to cure the displacement may be necessary.

(Prof. Simpson.)

When pessaries can be tolerated it is very desirable to remedy the displacement as the ovaries are elevated at the same time.

An Albert Smith pessary may answer the purpose.

If it should fail to be tolerated, a soft ring pessary or a very thick Hodge or one like Thomas' with an expansion at the upper end might serve.

These will be useless if the uterus is fixed.

Pessaries to produce Cicatricial Contractions in the Vagina.

These have been described on page.

It has been found occasionally that the neglect of a pessary has been a "blessing in disguise" for the contraction that followed the ulceration cured the patient's condition.

The above is an old-fashioned and dangerous method of imitating Nature.
Pessaries in Inversion of the Uterus.

1. In easy cases an air ball in the vagina supported by a perineal bandage may effect reduction.

2. In the absence of a special repositor (e.g., Aveling's) a fairly effective substitute is made by cementing a small half-expanded air ball on a small indiarubber disc pessary on the summit either of a straight cup and stem pessary or of Cutter's Prolapse pessary, the latter of which gives the advantage of the double curve.

Vicarious Hæmorrhages in Dangerous Situations.

Galabin states that the intrauterine stem has been useful in cases of Amenorrhœa complicated with the above.