THE MANCHESTER OPERATION

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Prolapse is such a common disabling condition that it is no wonder it has attracted the attention of the medical world ever since the time of Galen. It is only in comparatively recent years that it has to come to be realised that the real cure for it is surgical.

The operations that have been devised are legion. Two factors may be said to have contributed to this, namely, the complexity of the lesion and the nature and mechanics of the uterine supports, which until recently were little understood. In Great Britain the operative treatment has been standardised and the routine procedure is the Manchester operation.

History

As the two Crossens (1) have observed, the perfected operation is the integration of two lines of treatment, namely,

1) Vaginal plastic work, leading to the use of deep sutures.

2) The identification of the damaged structures and their individual repair.

According to Brentnall (2) the pioneers of vaginal plastic repair were Marshall Hall and Heming of London (1831), who narrowed the vagina by removing a portion of the anterior wall, Huguier of Paris (1841) who amputated the cervix and Hegar (1870) who combined colpo-perineorrhaphy with amputation of the cervix.

In 1888 Donald (3, 4) of Manchester combined anterior colporrhaphy and colpo-perineorrhaphy with amputation of the cervix — a procedure which, according to Shaw (5, 6, 7), had never been before.

In 1908 Fothergill (8), also of Manchester, announced before the Royal Society of Medicine that the main supports of the uterus and vagina were 'the parametrium and paracolpos.'

It is Brentnall's (loc. cit.) contention that the credit for the operation should go to Fothergill who, unlike Donald, based his operation on a knowledge of anatomy and used deep sutures. Shaw (6, 7, 13), however, maintains that Donald's operation was essentially the same as it is practised today. Shaw was Donald's house surgeon in 1904, whilst Brentnall did not join the staff of the same hospital until after 1918. Donald, however, did not adequately publish his technique, while Fothergill (9, 10, 11, 12) spared no efforts to popularise the operation. It would therefore appear that Donald formulated the principles of the operation and that subsequent authors, notably Fothergill and Shaw, have through their writings shown the anatomical rationale and improved the technique.

As the operation has been performed continuously in Manchester since Donald first laid down its foundations, it seems sensible to call the operation, as Shaw (7) has suggested, "The Manchester operation."

Anatomy and Principles of the Operation

It is now generally agreed that the chief sustaining and supporting structures of the pelvic viscera are the pelvic cellular tissue and the pelvic floor and that the two are complementary.

Following the description given by Curtis (13) and his associates, the pelvic cellular tissue is a mass of fibro-elastic connective tissue containing muscle fibres.

This tissue is condensed into a strong layer — the endopelvic fascia — overlying the upper part of the obturator internus and covering the upper surface of the levator ani. It is thickest round the cervix and to a greater extent round the vault of the vagina and sweeps radially in all directions towards the pelvic walls.

Anteriorly, two main condensations are formed, the pubo-cervical ligaments, which course towards the pubis. Laterally, the tissue spreads out fanwise to form the strong bases of the broad ligaments; they are called the cardinal ligaments and are the main supports of the uterus and upper vagina. Posteriorly, the tissue is thickened to form the utero-sacral ligaments. In addition, the pelvic cellular tissue sends out investing fasciae separately to the bladder and urethra, the cervix and vagina and the rectum.

The most important component of the pelvic floor is the levator ani muscle, which arises from the pubis and the fascia covering the obturator internus and is attached to the coccyx and sacrum. The anterior division, the pubococcygeus, sends forth decussating fibres between the urethra and vagina, between the vagina and rectum and between the rectum and sacrum; three slings are thus produced which help to support the organs mentioned.

Laxity of the pubocervical ligaments and investing fasciae causes cystocoele and/or urethrocoele; damage to the cardinal ligaments and levator ani leads to prolapse of the uterus and/or vagina and damage to the utero-sacral ligaments, levator ani and the rectal fascia gives rise to rectocoele and/or enterocoele. All these different damaged structures, except enterocoele, can be cured by the Manchester operation whose main object is to repair them and tighten them up. Thus, by approximating the overstretched cardinal ligaments and suturing them in front of the amputated cervix, the cervix is driven backwards and the uterus is raised and anteverted. In this manner the Manchester operation not only restores the anatomical relationship of the uterus but conserves its physiology.

Parturition subsequent to the Manchester Operation

	Operation		Number in Child-bearing period	Number of Deliveries	Subsequent Recurrence	Operative Delivery
	M	H				
Maier & Thudium	138		47	13	0	Inst. 3
Shaw	664			30	5	0
Gordon	358		58	18	1	Inst. 8; C.S. 1
Hunter	19		19	1	0	0
Fothergill	156			32	1	Inst. 23
Leventhal & Boshes	51			1	0	0
Salmon	254			2	0	0
Herzfeld & Tod	132			11	0	Inst. 3
Williams	45		45	27	0	0
Bazan & Althabe	354			8	0	Inst. 1
Borras	145	293		4	0	0
Mestitz		large series		large series	0	0
Schmid	605			4	0	0
Lacey	521		382	89	33	Inst. 35

Included in Lacey's figures.

Abbreviations. M=Manchester. Inst. =Instruments.
H=Halban. C.S. =Caesarean section.

Indications

There is general agreement that the Manchester operation finds its greatest field of usefulness in first and second degree prolapse occurring past the menopause. In view of its comparative simplicity and of the slight degree of shock that it entails, it is particularly of service in elderly women.

Opinion is divided as to whether the operation has a place:

a) During the child-bearing period.

b) In cases of procidentia.

In the child-bearing period, the risk of sterility, abortion and cervical dystocia can be eliminated by leaving the cervix intact, although shortening the cardinal ligaments, as Gordon (14), Crossen, Leventhal and Boshes (15) advise. Phaneuf (16), Te Linde (17) and Wharton (18) are sceptical.

The preceding table, reproduced from Gordon (op. cit.), shows the incidence of recurrence following childbirth.

Several operators in Great Britain, e.g. Shaw (5) and some workers in America, e.g. Gordon whose experience with this operation extends over 26 years, have found this operation curative for procidentia. Frost (19) favours the technique of Bissel who fixes the cardinal ligaments to the raw surface of the amputated cervix.

Limitations and Contraindications

In certain patients the cardinal ligaments are so attenuated that they cannot efficiently be used for repair.

The Manchester operation makes no provision for enterocoele; the latter is to be treated separately by the vaginal route at the same time that the former is being done.

For poor surgical risks, local anaesthesia is to be used.

The Manchester operation is obviously contraindicated during pregnancy and a few months after delivery and in subjects of a chronic incurable cough.

Operative Technique

A few points may be stressed to advantage. This is best done by taking the various steps severally.

STEP 1. Dilatation and Curettage.

This is not done routinely in some clinics, but it has two advantages, namely, (a) it facilitates drawing the posterior vaginal wall into the cervical canal and (b) it rules out malignancy. Frost (op. cit.) defares dilatation of the cervix until after the stump has been cut and in this way he minimises uterine infection.

STEP 2. Cystocoele dissection.

A wide operative field is necessary to allow of adequate mobilisation of the bladder and subsequent pleating of the lax tissues at the floor of the urethra. The incision in the anterior vaginal wall is roughly the shape of an inverted T, the slope of the horizontal bar depending, as Shaw (20) points out, on the amount of vaginal wall requiring resection.

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STEP 3. Exposure and section of the cardinal ligaments.

It was Fothergill (9) who first prolonged the incision towards the back of the cervix. Shaw (21) has recently adopted the same technique. Complete isolation of the cardinal ligaments permits of their being anchored at any level of the cervix, as in Bissel's technique.

STEP 4. Amputation of the cervix.

This is omitted in cases where subsequent pregnancy is a possibility.

STEP 5. Anchoring the cardinal ligaments.

This is the most essential step. According to Frost (op. cit.), Frank in America was the first to advocate actual isolation

STEP 6. Approximating the 'post-urethral ligament'.

Pleating of this structure and approximating the pubococcygeus are necessary for curing urethrocoele. As Pacey (22) says, this may guard against the eventual development of stress incontinence which might follow the dissection done in the process of anterior colporrhapy.

To ensure against prolapse of the bladder, Shaw (20) advises suturing the posterior border of the 'post-urethral' ligament to the cervix.

STEP 7. Closing over the cervix.

STEP 8. Uniting the anterior vaginal wall.

Operator	*Operation*	*Number of Cases*	*Deaths per cent*
Phaneuf	Interposition	224	2.2
Baer & Reis	do	220	0.45
Leventhal & Boshes	do	30	0.0
Phaneuf	Vaginal hysterectomy	125	4.0
do	do (clamp)	36	5.5
Baer, Reis, Laemmle	do	Unspecified	2 deaths
Phaneuf	Manchester	85	0.0
Leventhal & Boshes	do	51	0.0

of the cardinal ligaments prior to suturing them together to the front of the cervix. Shaw (21) has recently adopted the same technique. Complete isolation of the cardinal ligaments permits of their being anchored at any level of the cervix, as in Bissel's technique.

These two steps require no elaboration.

STEP 9. Firm perineal repair. This is a vital step.

Dangers

The risks of this operation are minimal.

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17. Te Linde, R. W. "Operative Gynaecology". 1946, First Edition, p. 110.
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In Shaw's (13) hands the operative mortality among 2293 cases was 0.43 per cent. The following table has been drawn up from Phaneuf (16) and Leventhal and Boshes (loc. cit.).

The risk of including one or both ureters in the ligature which approximates the two cardinal ligaments can be eliminated by separating the bladder wall laterally.

Secondary haemorrhage occurring about one week after the operation is rare. In Shaw's (5) view, it is practically never of any serious import. The writer has seen quite a severe one.

Urinary tract infection is the most common complication. With the advent of chemotherapy it has lost much of its former importance.

Wound infection is common but its occurrence is lessened if the nurse is well trained and if she washes the perineum and dries it up with spirit immediately after each action of the bladder or bowel It is seldom serious.

Parametritis and thrombophlebitis have the same incidence as in other major vaginal operations.

Occlusion of the cervix is very rare. Occasionally vaginal adhesions develop giving rise to subsequent dyspareunia. They can easily be separated. Dyspareunia may also result if the repair is too tight.

Results and Comparison with other Operative Procedures.

The high cure rate of the Manchester operation in England is well established. Shaw (13) reports a complete cure rate of 96.38 per cent among 664 cases operated on not less than 3 years previously. Fothergll's (12) figure was 97 per cent among 156 cases. Shaw's figures show that the results are equally good for young and old and for nulliparous prolapse.

Outside Great Britain there are staunch advocates for other procedures. This is due in great measure to the reluctance of some operators to embark on a new technique. For instance, Te Linde (op. cit.) admits that he has never employed the Manchester operation for procidentia.

Shaw's lecture in America in 1933 had much influence on Americal thought, with the result that in some clinics the Manchester operation is now the procedure of choice.

The following is a table taken from Loventhal and Boshes' paper.

Operation	*Cases*	*Morbidity per cent*	*Cures per cent*
Vaginal hysterectomy	116	50	70.7
Interposition	30	40	89.2
Manchester	51	29	97.9

Phaneuf (16) reports 13 recurrences among 224 cases of interposition operation and 3 in 85 cases of Manchester operation.

At the moment, only three other procedures are recognised in the surgical treatment of prolapse, namely, the interposition operation, vaginal hysterectomy and Le Fort's operation.

The interposition operation precludes pregnancy, necessitates a healthy uterus which must not be too small, imposes extreme difficulty should a recurrence occur or a subsequent hysterectomy become necessary, entails invasion of the peritoneum and is sometimes followed by severe bladder disturbances.

Vaginal hysterectomy by itself without a

logy". 1947, Second Edition, p. 276.

19. Frost, I. F. Amer. Journ. Obstet. and Gynaecol., 1941, li, 311.
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thorough pelvic floor repair is not a cure for prolapse, it sacrifices the uterus, it is attended by an operative mortality of 1-2 per cent, is technically more difficult and is sometimes followed by a worse type of prolapse. Although several gynaecologists, e.g. Fletcher, Shaw, Crossan, Phaneuf (23), Gordon, hold that it should only be done if there is an associated uterine pathology, it would seem that it has a place in complete procidentia "in those cases in which the pelvic pouches of peritoneum lie low and those in which the uterus remains small and its descent is associated with inversion of the vaginal vault" (24).

Le Fort's operation has obvious limitations but it gives good results where indicated.

Summary

An essay on the Manchester operation has been presented.

A brief historical account has been included.

The Manchester operation is the standard method of treatment for prolapse in Great Britain and is steadily growing in popularity in America. Its technique is comparatively simple, it entails very little risk to the patient and its results are uniformly satisfactory. It does not preclude subsequent pregnancy and is curative for most cases of prolapse.

Its superiority over other operative procedures for prolapse has been demonstrated by reference to the literature, which has been extensively reviewed.