

TRANSVERSE INCISION IN OBSTETRIC AND GYNAECOLOGICAL PRACTICE

by

M. D. ADATIA, M.D., F.C.P.S., Bombay.

A vertical incision has been most commonly used for pelvic operations in women since a very long time. But as one thinks and reasons out, a transverse incision seems to be definitely preferable and can be used in many pelvic operations with only a few contraindications.

General Considerations

Almost every surgeon is used to vertical incision which is easily and quickly fashioned, and can be extended upwards and downwards for increasing the field of operation. The midline is fairly avascular and thus causes little bleeding, and again the closure of the wound also becomes very easy. But it has several disadvantages, whereas a transverse incision has certain advantages over the former.

Most of the basic requirements for the abdominal surgical approach (Farris) are fulfilled by a transverse incision. The rectus sheath is formed of transverse aponeurotic fibres, which get inserted in the midline (McVay) and a transverse incision is not likely to damage it in the least: it is thus more sound on anatomical principles to make an incision transversely and separate the fibres instead

Read at the 11th All-India Obstetric and Gynaecological Congress at Calcutta in January 1961.

of cutting them. The rectus muscle is a segmental muscle and derives a segmental nerve supply. Its sheath is firmly adherent to the tendinous part of the muscle. Hence, when incised transversely, the rectus muscle meets with only minimal retraction, besides, it derives additional fortification from transversely laid fibrous tissue on healing (Curd). Again, as only the segmental nerve is damaged with this incision, the wound is less painful which helps in early ambulation. It results in the least possible damage to its nerve supply (Davies, Rees and Coller). The rich anastomosis between the inferior and the superior epigastric arteries ensure better healing at the lateral abdominal areas than at the midline which has the poorest blood supply than any other area in the abdominal wall.

Physiologically, a vertical incision interferes more than a transverse incision with the functions of respiration and muscular activity in the acts of vomiting, coughing, micturition and defaecation.

The abdominal wall of many multiparous women, particularly in the Gujarati and Marwari communities in this country, is very lax and often shows divarication of the recti or a latent ventral hernia. A little trauma in the form of a small cut for post-partum sterilization often precipitates a ventral hernia which

might have remained latent before and gives unnecessary blame to the surgeon.

History

As early as 1823, Baudelocque, a great French obstetrician, had advocated transverse abdominal incision for caesarean section. In 1900, Pfannenstiel popularised the low transverse incision which bears his name. Maylard suggested to incise the rectus muscle transversely in 1907 and advocated the method for increasing the field of operation with the transverse incision. In 1916, Moschowitz explained the advantages of transverse incision, based on sound anatomic and physiologic considerations. In the last decade, Collier Gurd, Lee, Middleton, Pernworth, Singleton and Tollefson have advocated the use of transverse incision as one of choice for pelvic surgery. Cherney, in 1941, suggested to divide recti at their tendinous incision into pubis and advised to resuture them to the rectus fascia on closure. This has become very popular with urologists for operations on bladder, ureter and even rectum.

In the author's observation Maylard's method of incising the recti transversely seems to be a superior way for increasing the field of operation.

Advantages of Transverse Incision

1. There is a remarkably low incidence of post-operative complications. Wound disruption and incisional hernia are very rare or even not possible in a very low incision taken on the pubic hair line. Some workers have reported the incidence

of such complications after a transverse incision taken little higher for major pelvic surgery, but still the incidence is five times more frequent with a vertical incision than with a transverse incision (Farris). Thomson and associates have reported a 3.5 per cent incidence of wound disruption with vertical incision and 0.5 per cent with transverse incision. Hunter emphasizes that post-operative hernia is essentially a complication of vertical incision. King states that hernia never results following the use of transverse incision. Sloan explained the physiological principles and made a study of utilization of muscular power, by attaching a spring balance. He came to the conclusion that more force was necessary to keep the edges of the wound together following a vertical incision than a transverse one.

Rees and Collier found the incidence of pulmonary complications to be 9.5 per cent after vertical incision and 2.6 per cent in a series who had transverse incision. He has also shown that the incidence of peripheral venous complications such as phlebothrombosis, thrombophlebitis and pulmonary embolism is much reduced by rapid ambulation and that more free movements could be permitted early following a transverse incision.

2. The abdominal wall during the early postpartum days is very lax and freely movable. An opening made with even a small incision on the pubic hair line can be easily shifted to either side of the uterus to follow the fallopian tubes. Cutting of the rectus is not necessary for simple exposure of the tubes. Reflecting the recti with two fingers and

fixing a self-retaining speculum is sufficient to give adequate exposure. This allows easy operability and permits avoidance of interference with the intestines.

3. A sound and less painful scar results with a transverse incision. Minimum damage and irritation are done to the cutaneous nerves, and adequate blood supply ensures maximum degree of healing (Farris, Collier, Rees and Thompson).

4. A low transverse incision is safer as the use of local anaesthetics and muscle relaxants is less needed and the required level of anesthesia is low. DeCarle and Durfee have shown this in the series reported by them.

5. There is less tension on the sutures while closing the peritoneum and thus the incidence of adhesions is markedly diminished.

Disadvantages

There are very few disadvantages.

1. The commonest one is that it takes little longer time to fashion a transverse incision than a vertical incision; but this is compensated by greater ease and comfort experienced while closing the wound.

2. There is increased bleeding in transverse incision as the lateral abdominal areas are more vascular. If the inferior epigastric vessels are injured, they bleed profusely, but if proper attention is paid to identify and avoid injury to them and ligaturing them, the rest of the bleeding is from only superficial vessels and can be easily controlled.

With such a very low incision cutting of the recti for the exposure for different methods of embedding the

ends of the fallopian tubes, transverse cutting of the recti helps to a very great extent. Again, cutting the transversalis fascia and the peritoneum transversely give sufficient exposure.

Technique of Incision

1. Patient is first kept in Trendelenberg position to displace the fatty panniculus upwards.

2. An incision is made transversely on the skin at any level between pubis and umbilicus, usually in the natural skin crease about an inch above the pubis. The incision is thus situated about an inch or so below the usual Pfannenstiel incision. In larger operations the incision should extend from one anterior superior spine to the other.

3. Cutaneous and subcutaneous bleeding is controlled by means of electro-coagulation of the bleeding points. A high frequency cutting current is used for coagulation and only the bleeding vessels are grasped in the clamp, to reduce tissue destruction and reaction.

4. The rectus sheath is incised transversely on either side. The median fibrous septum is incised. The recti are then bluntly dissected and separated with two fingers and the underlying peritoneum is observed. The recti are then elevated with curved artery forceps. The inferior epigastric vessels identified and ligatured to prevent hematoma formation. The recti are then cut transversely, if necessary, to give adequate exposure.

5. The peritoneum is then lifted up by two artery forceps and cut transversely.

A self-retaining speculum is then inserted and fixed by adjusting the screw. The pelvic contents can now be clearly seen in the abdominal cavity, and the required operation performed with ease and comfort.

The closure of the wound is also done in transverse layers one after the other. No drainage tube is advisable as it would work as a foreign body.

Meticulous care is quite essential during closure to prevent postoperative complications.

The peritoneum and posterior sheath are stitched transversely with continuous 00 chromic catgut sutures. Rectus muscles are checked for haemostasis and only apposed together but not sutured. This allows better healing. The anterior fascia closure is more important. Proper apposition and a satisfactory closure should be done with No. 1 catgut or 000 silk or stainless steel suture. Few interrupted sutures are first taken which are then followed by continuous suture. Weak spots and lateral angles should be carefully attended to. Spaces should be properly obliterated.

Skin would better be apposed by subcuticular 000 plain catgut or stainless steel wire for excellent cosmetic results or apposition of the skin can be carried out by nylon sutures and Michel's clips intervening between them.

Contraindications

In certain conditions vertical incisions should still be preferred

a. When extreme speed is necessary to open the abdomen, for example when patient is exsanguinated in

ectopic, placenta previa or abruptio placentae.

b. When large vertical defect in abdominal wall is to be repaired.

c. In abnormal bleeding tendencies, e.g. purpura and afibrinogenemia. In these cases avascular linea alba is better for operative purpose.

Personal Experience

Out of 450 pelvic operations carried out in women, with a low transverse incision, not a single case of wound disruption was noticed and the scar in every case was sound.

The author published results of 250 cases of post-partum sterilization operation done with very low transverse incision exactly on the pubic hair line in *Current Medical Practice* Vol. II, No. 3, Pages 155-157, March 1958. The scar in these cases gets covered up when the hair grows and becomes completely nondiscernible. Often it would not be noticed during usual clinical examination.

Six cases of seroma and five cases of stitch abscesses were observed. In seroma, serous fluid was drained by needle puncture which afterwards healed satisfactorily. All seromas were superficial and minor ones. In the case of abscess the stitch was opened out, pus was drained and the wound was allowed to heal by granulation tissue. Healing took place within a fortnight, but the scar even in these cases was also very strong and equally non-discernible.

In none of these cases the bladder was injured or any complications took place which would interfere with bladder function.

All patients were made to get up from the bed on the second day, and

hardly needed catheterisation more than once or twice. Distension of the abdomen or paralytic ileus was not noticed. Not a single instance of hernia was noticed. In two of the cases reported above, the wound became painful and swollen on the fourth and sixth days. The stitch was opened up and sero-sanguinous fluid was drained. The linen thread from inside was then explored under local anesthesia and removed. The wound was kept open for drainage. No evisceration took place and it healed up within two weeks, leaving a firm scar.

The following is the list of operations done with transverse incision from the year 1956 to 1960 :

Sterilization	389
V.S. and clearing of appendages	26
Hysterectomy	12
Caesarean section	2
Myomectomy	13
Ovarian cyst	5
Operation for ectopic pregnancy	3
Total	450

It is the impression that one can easily learn or train a person to use the transverse incision. Usually, surgeons are not used to cut the recti; if one gathers up courage to cut them transversely, adequate exposure is obtained in all cases.

It is also observed that the healing is quite satisfactory if the recti are not resutured while closing the wall.

Few cases had undergone previous abdominal operation, and a careful follow-up was done and particular inquiry was made from them whether they liked vertical or transverse

incision. All these cases frankly admitted that they preferred transverse incision for comfort and cosmetic results.

Summary

1. A strong plea for a transverse incision for pelvic operations in women is made.

2. The advantages of this incision and the anatomical and physiological principles involved are discussed.

3. The technique of incision is described.

4. Personal experience of 450 operations done at a private hospital is briefly reviewed. There was no instance of wound disruption or serious wound infection.

5. Patients have been reported to have preferred the comfort and cosmetic results of transverse incision, particularly those who had previous vertical incision.

References

1. Baudelocque A.: Nouveau procede pour practiquer l'operation Cesarienne, Thesis no. 132, Paris, 1823.
2. Cherney L. S.: Surg., Gyn. and Obst.; 72, 92, 1941.
3. Coller F. A. and Maclean K. F.: Abdominal Incisions, from Tribute to Lloyd Noland, 1947, Ann Arbor, Mich., University of Michigan Press.
4. Davies F., Gladstone R. J. and Stibbe E. P.: J. Anat.; 66, 323, 1932.
5. DeCarle D. W. and Durfee R. B.: West, J. Surg.; 56, 360, 1948.
6. Farris J. M.: Proc. Pan. Pacific Surg. Assn.; 4th Congress, p. 7, 1948, Honolulu.

7. Gurd F. B.: S. Clin. North America; 25, 271, 1945.
8. Gurd F. B.: Surgery; 20, 217, 1946.
9. Hunter G. W.: Am. J. Obst. and Gyn.; 39, 593, 1940.
10. King J. E., Meigs J. V. and Sturgis S. H.: Progress in Gynaecology, New York, p. 417, 1946, Grune & Stratton.
11. Lee A. E.: M. J. Australia; 1, 575, 1949.
12. Maylard A. E.: Brit. M. J.; 2, 895, 1907.
13. McVay C. B. and Anson B. J.: Anat. Rec.; 77, 213, 1940.
14. Middleton E. E.: Texas State J. Med.; 46, 154, 1950.
15. Moschowitz A. V.: Ann. Surg.; 64, 268, 1916.
16. Pernworth P.: Am. J. Surg.; 72, 573, 1946.
17. Pfannenstiel J.: Samml. Klin. Vortr.; 268 (gynak. No. 97), 1735, 1900.
18. Rees V. L. and Collier F. A.: Arch. Surg.; 47, 136, 1943.
19. Singleton A. O.: Am. J. Surg.; 73, 233, 1947.
20. Sloan G. A.: Surg. Gyn. and Obst.; 45, 678, 1927.
21. Thompson J. B., Maclean K. F. and Collier F. A.: Arch. Surg.; 59, 1267, 1949.
22. Tollefson D. G.: West. J. Surg.; 58, 308, 1950.