

alysis of the vaso-motor centre. This may set in very suddenly, with hardly any warning; it is as far beyond treatment as cardiac paralysis, and it is as fatal. If the cardiac paralysis from chloroform does not exist, vaso-motor paralysis must have been the cause of the numerous deaths recorded against chloroform; and how sudden and irremediable this is the reports of fatal cases abundantly testify.

When death occurs from vaso-motor paralysis it is clearly imaginable that the vaso-motor centre may be hopelessly damaged or rapidly reaching that stage, while the pulse is still present and the heart attempting to keep up the pressure. So that for some seconds there may be a deceptive condition in which both pulse and respiration are present, yet a fatal termination is imminent. That this death from vaso-motor paralysis does occur in man is shown by the very rapid running pulse mentioned in some cases as preceding the fatal termination.

The extensive experiments of the Commission have left the chloroform question in the following condition: It was not found possible to directly paralyse or effect the heart by chloroform in some 600 administrations. Death from chloroform is due apparently to paralysis of the vaso motor and respiratory centres—probably one or both of these may be affected. When death occurs it is the result of an overdose of the drug.

TRENDELENBURG ON OPERATIONS FOR VESICO-VAGINAL
FISTULA, AND ON THE ELEVATION OF THE PELVIS
DURING OPERATIONS IN THE ABDOMINAL
CAVITY.¹

By the efforts of Nægle, Dieffenbach, Jobert de Lamballe and Simon, this chapter of surgical gynecology seems to be perfectly closed.

New propositions lay only in the modification of instruments, the position of the patient, suture material, preparation for operation and the after treatment; the principle always remains the same, exposing and refreshing the edges of the fistula through the vagina, closure by

¹Volkman's Sammlung *Klin. Vortrage*, No. 355.

suture. In most cases a cure by these means can be accomplished and for ordinary cases it is useless to complicate matters.

Alongside of these favorable cases, there are unfavorable ones in which this procedure meets with the greatest difficulties and notwithstanding numerous operations no result is obtained. Winckel estimates that one-tenth of all cases of vesico-vaginal fistula remain uncured.

To the unfavorable cases belong the vesico-utero-vaginal fistula, and the uretero-vaginal fistula, specially the latter. There are also some cases of pure vesico vaginal fistulæ which present so many difficulties as to endanger the success of the operation. Cicatricial contraction of the vagina and adhesions to the pelvis making it impossible to draw away the uterus from the vesico-vaginal wall. Proximity of the uterus prevents a proper paring of the edges of the fistula, or large defects and the unfavorable position of the same close to the urethra does not allow of close apposition of the edges of the wound without producing considerable tension. These difficulties may be so great that the fistula may only be partially but not completely cured.

A partial cure does not improve the patient's condition, and finally kolpoplexis has to be resorted to, which though curing one evil brings on another.

The writer states as a result of his experience :

1. That fistulæ which cannot be easily reached through the vagina can be easily operated on through the bladder.
2. Fistulæ which cannot be closed by bringing the edges together can sometimes be closed by covering them with a flap from the posterior or vaginal wall.

It is well known now, thanks to the advances in surgery, that large wounds of the bladder heal rapidly; and the elevation of the pelvis has given us an easy means by which, once the bladder has been opened, it is as easy to operate in this viscus as through the vagina, so nothing is easier now than to close a fistula, the walls of which can only be reached with difficulty through the vagina by operating on it from inside of the bladder.

The first attempts of Trendelenburg in this direction were in 1881 and 1884, and have attracted hardly any attention, only König has referred

to them casually in speaking of the elevation of the pelvis, which he says gives such a good view of the interior of that bladder that the finer vesical operations can be attempted with ease.

If a patient be placed on the operating table in such a manner that the symphysis pubes forms the highest point of the trunk, and the trunk forms an angle of 45° , then all the solid abdominal contents will fall towards the diaphragm, and the small intestines will fall out of the pelvis.

If an incision be now made in the hypogastric region, and the recti muscles as well as the fascia behind them divided air rushes immediately into the pre-vesical space, pushes the peritoneum backward and there is a large opening in which the anterior wall of the bladder with the reflection of the peritoneum is plainly visible, and now the bladder may be incised with perfect safety, without it being necessary to distend it with water.

Trendelenburg advocates elevating the pelvis in all intra-peritoneal, as well as in all operations in the pelvis.

If the bladder be opened (in an elevated pelvis) by a transverse incision parallel to the reflection of the peritoneum, and the sides of the incision retracted, the whole of the interior of the viscus will be brought to view, and if a fistula exists it can be readily seen. It is now perfectly easy to freshen the edges of the fistula and bring them together by sutures. The best sutures are silk-worm-gut, and they should be so passed as to be tied in the vagina, for if tied in the bladder urinary concretions form on them, and give rise to after trouble.

Catgut sutures may be used and tied in the bladder, for they will be come absorbed along the stitch track and the knot will be voided with the urine.

The fistula being closed in the above indicated manner, it remains to close the bladder wound, and this is accomplished by sutures which secure the most perfect apposition possible, and over these a row of Lembert's sutures. An opening is left in the center for drainage, in which a T-shaped tube is introduced. Then the external wound is closed except at three points, each angle and the centre. Through the central opening the vesical drainage tube passes, through others the pre-vesical space is drained by means of strips of iodoform gauze.

The patient is then placed in a horizontal position and the bladder thoroughly washed out, and an iodoform gauze tampon is placed in the vagina, and the patient put to bed and kept on her side, she being changed from one to the other side every two or three hours, to relieve the trochanters from pressure. The suprapubic wounds are treated openly and the dressings frequently changed. If the bladder tube should become stopped up by blood clots, it is carefully washed out; if cystitis should set in, the bladder should be carefully washed out at necessary intervals.

From the fifth day onwards the patient may from time to time lie on her back; from the ninth to the twelfth day the bladder tube is removed and about twenty days later the integrity of the viscus is perfectly restored.

So long as the urine remains acid the chances of the bladder healing without forming a fistula are excellent.

The drainage of the bladder for the first two weeks is the most important part of the operation.

Trendelenburg does not approve of a partial resection of the symphysis in order to get a better entrance into the bladder.

Closure of a vesico vaginal fistula by flap transplantation has already been attempted by Jobert, Roux, Wutzer and others, though no case of cure is reported in the older surgical literature.

Trendelenburg advises in those cases of fistulae which have resisted the ordinary operative form of treatment, to try and close them by a flap and pedicle taken from the posterior vaginal wall, and sewn in such a manner that a pedicle remains, alongside of which some urine escapes. When the flap has been firmly healed in the fistula its base is cut off and used to close the remaining opening, and to prevent any vesical tenesmus or infiltration of urine; a suprapubic cystotomy is done at this time.

The flap usually heals thoroughly in the fistula before the bladder tube is removed.

Trendelenburg did this operation in one case some years ago, and since then the woman has borne three children and has had no recurrence of her trouble.

He looks upon kolpoplexis, or obliteration of the vagina as a barbarous proceeding which should only be used as a last resort.

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