

the noose is applied round the root of the polypus, and the ends are then drawn tight, and tightened daily until the tumor drops. A similar instrument is described by Nissen (*De Polypis Uteri*. See *Richter's Chir. Bibl. b. ix. s. 613*). The tubes are brought together by a third double canula, and then the ends of the ligature are tightened. Gooch's well-known instrument is a modification of Nissen's, the tubes being made straight.

Until recent years this method of slow strangulation was generally pursued in cases where the polypus was large and the pedicle thick. The strangulation by arresting the circulation through the pedicle gradually caused the tumor to fall off by sloughing or mortification. This process would take from two to ten days or more to be completed. During this time, the tumor sloughing, would give rise to offensive discharges; inflammation has extended from the pedicle to the substance of the uterus, peritonitis and death ensuing. The metritis and perimetritis might be induced from simple extension from the injury caused to the neck of the tumor. More frequently these affections were the result of pyæmia or septicæmia.

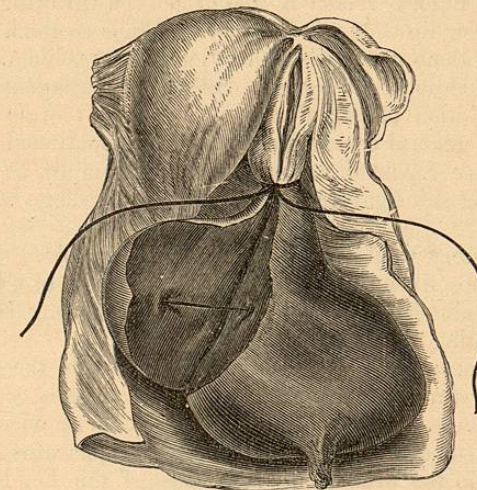
In many instances death has followed the attempt to remove the tumor by Gooch's instrument. R. Lee records nine deaths out of fifty-nine operations. McClintock records three deaths out of ten operations, the causes being "phlebitis," or metritis and peritonitis.

There is serious danger from retaining for hours or days consecutively a rigid instrument projecting beyond the vulva. Thus, in St. George's Museum, is a specimen (No. xiv. 54) showing that the instrument may cause death by impalement. It is a uterus with a fibrous polypus attached around which a ligature has been applied, and which is seen *in situ*. The patient having turned in bed on her back, the canula pressing on the mattress, perforated the uterus and caused death. In the following cases death ensued in other ways: St. George's Museum (No. xiv. 50). Close to the os uteri is a fibrous polypus, to the pedicle of which a ligature was applied. The patient died of peritonitis six days after operation. The two following specimens are in the same museum: No. xiv. 55. A large polypoid tumor removed by ligature. Death ensued from peritonitis a week after operation. No. xiv. 58. Uterus with a polypus growing from its wall, which has been partly separated by the ligature. The patient died of peritonitis three days after operation.

St. Bartholomew's Museum shows the following instructive cases: Ser. xxxii. 49. A uterus with many fibrous tumors: one suspended by narrow pedicle from anterior wall just within the internal cervix (os?) pendulous beyond the os uteri, softened and changed in consequence of its pedicle having been tied shortly before death. Patient, æt. forty, had suffered menorrhagia for two or three years. Pedicle tied by a double canula; next day dysuria, then retention of urine, then signs of peritonitis; death on third day. No. 32.3. Section of a uterus and firm fibrous polypus, which has grown from nearly the whole circumference of the neck of the uterus. A ligature was placed around the polypus near the line of its connection with the uterus; but the death of the woman took place before the ligature had separated. A portion of glass occupies the groove in which the ligature was tied; and it will be observed

that this groove, in a part of its extent, is formed in the substance of the uterus, the neck of which is elongated and almost imbedded in the upper part of the polypus. No. 32.24. "A uterus from which a fibrous polypus was removed by ligature eight days before death. A circular ulcer about one-half inch in diameter in the fundus of uterus marks the spot where polypus had sloughed. The whole tissue of uterus is swollen. From a middle-aged woman—she died with acute inflammation of the uterine veins." Fig. 163 is another illustration.

FIG. 163.



Uterus with firm Fibrous Polypus attached to the Upper Wall (R. B.).
Strangled by ligature. Death from peritonitis. (Half size, St. Bartholomew's, 32, 3A.)

The danger of strangulation by ligature is indeed somewhat lessened by cutting off the tumor below the seat of strangulation. By this means we diminish the source of decomposition, and hence the risk of septicæmia. But the strangled stump may still be enough to set up mischief; and the only argument remaining for not removing the whole tumor at once without the intervention of the ligature is the fear of hemorrhage. Experience has dispelled even this fear.

Phlegmasia dolens has followed slow strangulation.

In addition to the examples I have cited, the literature of the subject down to twenty years ago may be said to abound with evidence of the dangers and mortality attending slow strangulation.

2. *Torsion and excision by scissors* are especially applicable to small polypi of the cervix. To carry out these proceedings it is generally necessary to use the speculum. My speculum, Cusco's or Marion Sims's, are the most convenient. Torsion should on no account be used if the stalk is at all thick or firm. Montgomery, says McClintock, published a case where a portion of the uterus was actually detached, and brought away adhering to the pedicle; the woman nearly lost her life from hemorrhage. Some soft mucous or glandular polypi are cured by *crushing*

with the forceps. Seized between the blades of the instrument, it is enough to break them up. Thus killed, the hemorrhage commonly ceases. But the spot may be touched with perchloride of iron or by the actual cautery as a further security.

The removal of polypi even of considerable size by scissors was extensively practised by Dupuytren, Siebold, Mayer, and others, who preferred it to the ligature. I have seen it practised by Lisfranc. Sir Charles Locock generally preferred it.

Although it may be generally true that no serious hemorrhage follows excision, still the risk is not to be disregarded. Montgomery relates a fatal case. McClintock relates a case of polypus growing from the inside of the anterior lip of the os uteri by a pedicle as thick as one's third finger. There was no perceptible pulsation in the pedicle. He divided this with scissors close to the tumor. Smart hemorrhage succeeded, and the saturated solution of perchloride of iron in glycerine was applied. This checked the general oozing, but two arteries continued to bleed, and having failed after repeated attempts to take them up, he included the pedicle in a strong silk ligature, whereby the hemorrhage was completely arrested.

The actual cautery would in such cases be applicable.

Sir James Simpson used a polytome, which consists of a knife strongly curved like a reaping-hook, or the obstetric decapitating hook of Ramsbotham, surmounting a long stem.

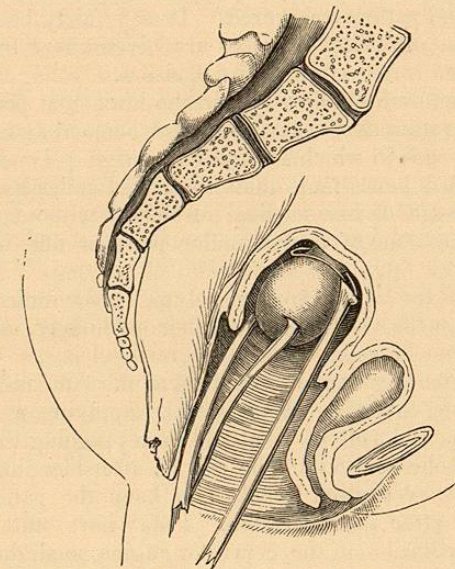
But the most accurate and effective instrument is the *wire-écraseur* now generally preferred. It combines the advantages of excision with those of the ligature. It cuts through the pedicle at once. The original of these instruments is Professor Graefe's apparatus, specimens of which are found in the armamentaria of most of the London Hospitals. Simpson describes (*Edin. Med. Journ.*, 1850) an instrument given him by Dr. Sabine, of New York, by which a silver wire was made to cut through the pedicle by a screw. Chassiagnac's chain-écraseur has been used, but it is not so convenient as the wire instruments. The rope has been made of strands of several fine iron or copper wires; but of late it has been found that a stout, single iron wire, made flexible, answers better. For the best form of wire-écraseur, see Fig. 48, p. 151. A loop is drawn through the eye of the stem, and by the aid of the stem and two or three fingers in the vagina, the pedicle is caught. The noose is then tightened by a travelling screw or windlass, until it comes back through the eye, when the pedicle is found to be divided. The tumor is felt rolling loose in the vagina, and may be seized and drawn out by a vulsellum. If the tumor be very large, the extraction from the vagina may be a work of some difficulty. It has been found necessary to grasp it with the midwifery forceps, and deliver it like a child's head. In noosing the pedicle it is not necessary to carry the noose beyond the tumor, or up to the insertion of the root in the uterine wall. It is enough to get the noose fairly beyond the equator of the tumor, when on drawing in the slack of the wire before tightening by the screw or windlass, the noose will adjust itself at the junction of the tumor with its root. The stump decays, breaks up, and there is no probability of another tumor springing from it. Generally, when a polypus is removed, the cure is permanent. But

of course a second uterine fibroid may be converted into a polypus like the first. Should bleeding occur, it may be staunched by perchloride of iron carried on lint, and maintained by plugging. Or the stump may be touched by the actual cautery. No dressing or other application is required. But it may be useful to wash out the vagina with carbolic acid water for a few days.

Intra-uterine polypi may be noosed and excised in like manner. If necessary, the cervix uteri can be expanded beforehand by laminaria-tents or by incision.

It is not commonly necessary to induce anæsthesia for this operation. If the tumor be easily accessible, the wire-noose can be slipped over it without causing much pain; and the tumor itself being insensitive, the actual excision is painless. And in discussing the treatment of inversion, we have seen that pain during the tightening of the wire gives warning that the tumor is not a polypus, thus giving opportunity to retrieve error. But when the tumor is large, and the stalk difficult of access, it will often be best to induce anæsthesia; this enables the operator to pass his hand if necessary well into the pelvis, and to explore thoroughly the relations of the tumor before adjusting the wire. A full diagnosis being made, the *écraseur*, armed with its wire-loop of a size corresponding to the idea

Fig. 164.



Operation for removing Polypus Uteri by Wire-écraseur (R. B.).
The polypus is seized and pulled down by vulsellum, and the wire is carried over it.

we have formed of the size of the tumor, is passed in either in front or behind. The end of the instrument is carried fairly up to the base of the polypus, whilst the loop is slipped over the polypus itself by help of a finger, or a firm notched probe. When the loop is once over the equator of the polypus, a few turns of the screw suffice to carry it down

to the stalk. It then adjusts itself, and the continued working of the screw completes the abscission. In some cases it is convenient first to seize the tumor by a vulsellum, and to draw it down low in the pelvis before adjusting the wire, as illustrated in Fig. 164.

When the base of the polypus is very thick, and especially if we suspect that it is unusually vascular, the galvanic wire-cautery is the best instrument to use. Indeed, this should generally be preferred when the tumor is "implanted" or "sessile."

Even after an intra-uterine polypus has been severed from its attachment by the wire, it is not always easy to get it away. It rolls about under touch or attempt to seize it, like one Chinese ball inside another. If on grasping it by a vulsellum it will not come through the cervix uteri, it may become necessary to cut it up, and to bring it away piecemeal. This may be done by scissors, or it may be necessary to dilate the cervix by laminaria-tents, or incision, or by my bags.

The advantages of instant removal of polypi over slow strangulation are very decided. The relief is speedy; no instrument is left in the parts; and the risk of inflammation and septicæmia is infinitely less. Nor are these advantages weakened by any serious drawbacks. The risk of hemorrhage is very small. If any bleeding occur it may be checked by touching the surface with a solution of perchloride of iron, or by plugging. I have only once seen serious septicæmia follow ablation by the wire-écraseur. The patient recovered. It may fairly be said that accidents, such as those of which examples are given above from strangulation, are of extreme rarity after instant excision.

It is proper to enforce absolute rest in the horizontal posture for some days after the operation as a security against hemorrhage and inflammation. But in one case in which I removed a large polypus by the wire, the subject travelled home more than a hundred miles by rail the same day under the charge of her medical attendant without any untoward accident. This was done of course under peculiar and urgent circumstances.

The treatment of the "hypertrophic polypi," to be entirely successful, must be based upon the view traced of their pathology. They must be removed, as a matter of course, but their removal is not enough. The simplest way of removing them is to cut them off with scissors. Should any bleeding follow, this may be arrested by applying a small pledget of lint soaked in perchloride of iron, and then plugging the vagina with lint soaked in carbolic acid oil. The risk of after-bleeding then is very small, provided the precaution be taken to keep the patient in bed for two or three days after the operation. I may here state incidentally, that there is no operation on the cervix or vagina so slight, if involving incision of the mucous membrane, that may not be followed by great, even dangerous, flooding if this precaution be not rigorously enforced. Hence it should be recognized as a rule in practice, never to perform such operations in the consulting-room or in the out-patients' room of a hospital.

The next indication after removal of the polypus is to counteract the process of hypertrophic extension of the cervix uteri, of which the polypus is a consequence. The treatment in the advanced stages, when the elon-

gation is considerable, is a subject not now under discussion. I can only here consider what is to be done in the earlier or incipient stages of hypertrophy when decided action may effectually arrest the morbid process. For a week or so after the removal of the polypus rest is all that is necessary; then if any active inflammation of the cervix remain, the occasional application of solid nitrate of silver or sulphate of zinc, with lead lotions, should be used until the inflammation has subsided. This accomplished, a free slough of the most hypertrophied lip should be wrought by applying potassa cum calce, or the actual cautery in a line across the lip. The healing of this slough induces altered nutrition of the part, promotes absorption, and the contraction following being inwards or centripetal, acts in direct antagonism to the morbid hypertrophic extension. Injections are useful to deodorize the discharges. The best are of lead, perchloride of iron, carbolic acid, creasote, or permanganate of potash.

Gooch very properly insists that we should not be deterred from dealing with polypoid tumors under the doubt that they may be malignant. If cancerous growths assume the common mushroom-form admitting of being embraced by a ligature, even in part, he has found it good practice to remove them. The hemorrhages are checked, and, at least, a respite is gained. The accuracy of this view has been lately confirmed by many practitioners. These are especially cases for the use of the galvanic wire-cautery.

The *after-treatment* consists in rest, generous diet, tonics. If there is bleeding, a pledget of lint steeped in perchloride of iron can be applied to the seat of the stump through a speculum. The ulcerations caused on the mucous membrane of the cervix and vagina by the chafing of the tumors will often heal now the cause is removed. If not, occasional touching with nitrate of silver or iodine will be required.

The sessile glandular polypi are easily removed by a fine wire-écraseur. Prominent Nabothian glands or follicles are cured by simply puncturing them. The vascular polypi, if broadly sessile, are most effectually treated by the actual cautery.

Placental polypi I have several times removed satisfactorily by the wire-écraseur. The loop applied close at the base shaves them off completely, or at any rate will so break up their tissue, that hemorrhage ceases, and the *débris* are quickly removed by disintegration. Sims's curette also will often prove useful in these cases.