in the museum of the Royal College of Surgeons. It seems very probable that these cysts were produced in consequence of punctured wounds produced by the goads so commonly carried by cattle drovers; the sharp iron spike surmounting the tops of the goads is an excellent instrument for experimentally producing such cysts. In the case of the iris, it is a fact well established clinically, and demonstrated experimentally, that cutaneous cells and hair follicles engrafted on the iris will serve as the germs of dermoid cysts.

OPEN FALLOPIAN TUBES, THEIR DIAGNOSIS, PATHOLOGY, AND TREATMENT, ILLUSTRATED BY FIFTY-THREE CASES.¹

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At last year's meeting of the Association, in Dublin, I made the statement that open Fallopian tube existed far more frequently than was usually thought, and I am gradually coming to the conclusion, from extended observation, that it may ultimately turn out to be a normal *post-partum* condition, just as much as subinvolution of the uterus, and, like the latter, is only taken notice of when it is arrested, and attended with distressing symptoms. It is one of the factors of displacement of the uterus. In short, to understand the etiology of displacement of the *post-partum* uterus, we have to keep in mind the enormous hypertrophic growth during pregnancy, not only of the uterus, but of the Fallopian tubes, round ligaments, and broad ligaments generally. The ovaries do not participate in this general hypertrophic development. The lessened or stationary supply of blood to them, or its partial withdrawal, to supply the uterus, tubes, etc., and the periodic discharge of nerve force in uterine contractions, will account for the cessation of ovulation during pregnancy—if it does cease, for we have no evidence as yet one way or the other, as to whether it goes on or not. In performing Cæsarean section, I have again and again demonstrated this fact. The enlargement and growth of the tubes are seen to be commensurate, and *pari passu* with the uterine development. The process is probably a conservative one, and is in keeping with physiological law. If the tubes were overstretched over the enlarging uterus, without developmental growth to counteract the bad effects of tension, atrophy would be the natural sequence. After parturition, involution rapidly restores the genital tract, of which the Fallopian tube is part, to its normal conditions. Arrestment of this normal process, by whatever cause, develops new pathological and symptomatic conditions. Pushing the uterus and appendages down into the pelvic cavity by pads and tight bandaging after labour, produces mechanical displacement of the whole of them. Permitting the patient to leave the recumbent position too soon gives rise to the same from gravitation. Tight lacing, heavy petticoats, and whatever compresses the abdominal viscera, or interferes with the normal retentive power, will produce the same results. In all the same consequence arises; namely, interference with the circulatory system of the organs and engorgement. Displacement of the uterus, virgin or otherwise, gives rise to engorgement, and then hypertrophy; and from observation, it is also seen to arrest involution, and on exploration, the cavity, not only of the uterus, but of its prolongations, the oviducts, is found enlarged and more than normally patent. Subinvolution accounts for the patient's condition, at first physiological, but subsequently pathological, by the superaddition of acquired diseased conditions. There may be simply inflammatory catarrhal irritation of the endothelium, of the tract, simple or enthetic, possibly sometimes specific or at least depending upon some constitutional dyscrasia; flabby relaxation of the uterus, and the absence of firm contraction will account for non-closure of the ostium uterinum of the oviducts, and alternating relaxation and contraction will explain how the probe can be passed at one time and not at another. It is a matter of speculation whether some catarrhal tubes, slightly affected, may not be open during menstruation from relaxation; ovaries fall down then and recover their proper position after it

is over. After abdominal section and exposure of the tubes distended with fluid, and having their fimbriated extremities occluded by tubo-ovarian adhesive inflammation, their canals can be catheterised, after detachment and opening of the fimbriated ends, but only as far as the uterine wall. The interstitial or uterine portion of the tube is closed in such cases, as well as the ovarian extremity. Were it otherwise, these tubal collections would escape into the uterus and vagina. In some cases I have seen this happen in the virgin uterus, and a patulous tube result, which however speedily recovers its normal condition, with or without treatment. In two cases I succeeded in catheterising such collections *per uterum*, one of whom being married, shortly afterwards became pregnant.

In the case of open tube associated with ovarian cystoma, the etiology is to be sought for in simple hypertrophy of the organ, the uterus being normal in size; or it may have arisen from subinvolution consequent upon parturition three months previously. It was puzzling as a factor not to be overlooked in making the differential diagnosis of fibrocystic myoma or ovarian cystoma, and, as all the physical signs pointed in favour of the latter, it became more so. I had, however, seen some similar cases before, though not so well marked. The right tube was normal, and the uterus small. The left tube was adherent to the tumour for about six inches, and was excised with it.

Stenosis may be congenital, or acquired from chronic salpingitis consequent upon subinvolution of the tube and cicatricial contraction. This probably is the explanation of the condition which is finally arrived at in cases where Fallopian collection and inflammatory thickening gradually but finally disappear. Hence the rarity of finding tubal disease in the dead-house on *post-mortem* examination. Of course this has an important bearing upon the question of abdominal section and excision of the tubes, unless the symptoms are so well marked and urgent as to warrant operative interference.

It will now be seen that the old theory of increased and abnormal canalisation from an analogy of the open os uteri and open Fallopian tube during the passage of the ovum may be set aside as pure imagination. The pathology of the Fallopian tubes and their diseases is now pretty clearly understood. I shall only be too happy to know that my views have been corroborated by the investigations of others, and especially of those who have the supervision of large lying-in hospitals.

The table of over fifty cases of open Fallopian tubes shows, in the first place, its invariable occurrence subsequent to pregnancy and parturition, except in the inflammatory division, and in that I have not entered into any detailed notice of the various forms of disease that affect them.

The question may here be asked, why should both oviducts be patent in one case, and one only in another? The placental site may determine this. In a uterus at the sixth month of gestation, removed from a patient who died from cardiac disease in the Royal Infirmary, the left Fallopian tube was open and distended with sero-sanguineous fluid. Its ostium uterinum was covered by the placenta. The right was free, but closed. The diagnosis, so far as symptoms can guide us, is somewhat obscure. The physiognomical expression, the abdominal expression of countenance mixed with suffering, the stooping and dragging of the limbs, as if the patient could hardly get along, and the general *malaise*, taken into consideration with recent delivery, indicate abdominal and pelvic exploration. Various forms of reflex neurosis, numbness, cramps, pain of a burning, aching, gnawing, shooting, or stabbing character; in short, multitudinous forms of neurotic disorder from simple fornication to complete paraplegia, are met with in an exaggerated degree. In this they differ chiefly from the symptomatology of slighter forms of disturbance of the same set of nerves and ganglia. Down-bearing on standing, frequent micturition, pressure upon the rectum, and other physical complaints or their consequences are detailed to you. In exploring the pelvic cavity in a typical case the mucous membrane of the vulva and vagina is congested, red, and livid, and this is intensified on the shortened, swollen, and oedematous cervix uteri which fills the calibre of the largest speculum. The uterus lies low on the pelvic floor in the first stages of procidentia and retroversion, and often strawberry-looking erosion on either lip or on both is seen, while a profuse, gelatinous, ropy, yellowish mucus wells from a patulous os. Bimanual examination shows the whole organ is flabby and large, and probably one or both ovaries and tubes lie in the recto-uterine pouch. A well-made, blunt-pointed, medium uterine sound is glided cautiously along to one corner; with

¹ Read in the Section of Obstetric Medicine at the Annual Meeting of the British Medical Association, held in Glasgow, August, 1888.

Hospital Patients.¹

No.	Name.	Tubes Post Partum.	Duration.	History.	Remarks, Conditions, &c., Found.	Result.
1	H. P.	R. L. Tubes	12 weeks	Cramping pains in back and hip, cannot lie or sit	Vagina livid red, cervix shortened, mucous discharge, strawberry ulcer, post. lip	Cured.
2	E. S.	Left "	10 weeks	Pains in both iliac regions, especially left	L. ovary enlarged, uterus retroverted, swelling of left iliac region	"
3	M. R.	Open "	2½ years	Great pain in left iliac fossa and in back	Vaginal discharge, uterus retroverted, cervix hyperplastic, great tenderness and swelling in both iliac fossae and behind uterus	"
4	E. G.	Left "	2 months	Burning pains in back, abdomen, and hip	Vagina red swollen, uterus enlarged	"
5	L. B.	Open "	10 months	Pain in back, great pain and swelling of right leg	Leucorrhœa, cervix varicose and very congested, uterus normal size and position	"
6	L. P.	Left "	8 weeks	Shooting pains in left groin and hip, painful on walking or sitting	Cervix normal, uterus in front, glairy mucus from os	"
7	H. C.	" "	2 years	Pain in back and both groins	Cervix very much congested, uterus retroverted, both ovaries prolapsed, enlarged	"
8	E. G.	" "	2 months	Bearing-down pains in abdomen, hurts to sit or walk	Leucorrhœa, uterus retroflexed, enlarged ovary to right of fundus, granular os	"
9	M. K.	" "	13 months	Pain in left side and left iliac region	No discharges, uterus somewhat injected, anterior lip of os granular, L. ovary tender	"
10	A. D.	" "	3 years	Pain in left side, difficulty of micturition	Vaginal mucous membrane livid, cervix enlarged and tender, glairy mucous from os	"
11	H. C.	" "	2½ years	Severe shooting pains in left side, groin, and leg	Vagina inflamed, uterus horizontal in pelvis, fundus fixed	"
12	S. C.	" "	2 months	Pains in left side and leg	Cervix congested and livid, uterus normal	"
13	E. G.	" "	18 months	Great pain in left side, shooting to back	Cervix granular, painful swelling behind uterus, which is retroverted, mucous discharge from os	"
14	A. T.	Open "	6 weeks	Pain in abdomen, cannot sleep at night	Cervix congested, discharge of glairy mucus from os	"
15	E. H.	Left "	7 months	Bearing-down pains, leucorrhœa	Cervix split, uterus retroverted, os eroded, granular and livid	"
16	M. B.	Open "	7 weeks	Pains in abdomen and back	Cervix congested, uterus retroflexed, os patulous and congested	"
17	E. B.	" "	4 weeks	Pain in lower abdomen and back	Cervix eroded, uterus retroverted, os granular, livid glairy discharge	"
18	C. O.	" "	5 weeks	Pain in abdomen and hips	Cervix congested, uterus enlarged, os congested, livid and patulous	"
19	A. D.	" "	2 years	Pain in abdomen, back and both groins	Cervix congested, uterus retroverted	L closed, Relosing. Cured.
20	A. D.	" "	15 months	Constant pain in abdomen, extending to sacrum	Cervix shortened and swollen, uterus enlarged, gelatinous discharge from os	"
21	M. W.	" "	5 months	Pain in back and abdomen, loss of blood	Cervix congested, bleeds easily, uterus enlarged	"
22	M. E.	Right "	4 years	Pain in back, bearing down, difficulty of micturition	Cervix elongated, uterus retroverted, bladder prolapsed	"
23	J. C.	Open "	3 months	Pain in abdomen and back	Cervix slightly congested, uterus normal	"
24	J. Q.	Left "	"	Pain in left side and left iliac fossa	Lips of cervix thickened, uterus enlarged, glairy discharge from os	Recovering.
25	A. W.	Open "	12 months	Bearing-down pain in abdomen and legs	Leucorrhœa, uterus enlarged	Cured.

Private Patients.

No.	Name.	Tubes Post Partum.	Duration.	Remarks, Condition, &c., Found.	Result.
1	Mrs. C.	Open Tubes	—	Reflex paraplegia, debility from over lactation	Cured.
2	Mrs. B.	" "	—	Perimetritis, after uterine injection by her doctor	"
3	Mrs. G.	Right "	26 days	26 days after labour. Acute pelvic cellulitis and abscess	"
4	Mrs. J.	" "	8 weeks	8 weeks after labour. Subinvolution, lochial discharge, pain	"
5	Mrs. McC.	Left "	3 months	Abdomen, hands, and feet swollen, pain in left groin and back, paraplegia, subinvolution	"
6	"	Open "	8 weeks	Second attack. Pelvic pain, down-bearing, general malaise, subinvolution	"
7	Mrs. L.	" "	6 "	Neuroses, hypogastric pain, cannot walk, 5 m. tremors, subinvolution	"
8	"	" "	6 weeks	Neuroses, hypogastric pain, subinvolution	"
9	Mrs. K.	Right "	—	Coil in Douglas's pouch. Operation had been proposed for it. Subinvolution	"
10	Mrs. C.	Left "	7 months	Never well since confinement. Engorgement of uterus, catarrh, subinvolution	"
11	Mrs. D.	Right "	misc. 2yrs, 3yrs.	Menorrhagia, retroflexion. Coil in Douglas's pouch, subinvolution	"
12	Mrs. C.	Open "	7 weeks	Pain in stomach and back, down-bearing	"
13	Mrs. F.	Left "	8 "	Pain, sacral, ischiatic hip, and shoots to knees, engorgement of uterus, subinvolution	"
14	Mrs. H.	Open "	8 months	Neuroses, sympathetic emotion, loss of muscular power, formication, cramp, subinvolution	"
15	Mrs. M.	Left "	3 "	Rheumatic aching in lower abdomen and pelvis, subinvolution	"
16	"	Right "	3 "	Recurrent after another confinement—retroflexion, subinvolution	"
17	Mrs. H.	Open "	3 "	Sacro-iliac pain, cannot walk or stand, retroflexion, subinvolution	"
18	Mrs. J.	" "	11 weeks	Frequent micturition, cannot walk, uterine pain, retroflexion, subinvolution	"
19	Mrs. B.	" "	3 months	Sacralgia and hypogastric discomfort, palpitation, neuroses, subinvolution, and a fibroid tumour of fundus uteri	"
20	Mrs. H.	" "	2 "	Subinvolution, os tincæ large, oedema purplish-blue red, procidentia	"
21	Mrs. D.	" "	11 weeks	Post partum hæmorrhage, subinvolution, procidentia, retrover., livid, swollen, red raw os tincæ, had displacement after previous labour	"
22	Mrs. H.	" "	6 weeks	History of gonorrhœa, uterine pain last 4 months of pregnancy, subinvolution, retrover., uterine engorgement, &c., confined to bed, cannot walk	"
23	Mrs. K.	Right "	15 months	Never well since confinement, retroflexion, ovary and tubes in Douglas's pouch, subinvolution	"
24	Mrs. T.	Left "	5 "	Pelvic pain, procidentia, subinvolution	"
25	Mrs. C.	Right "	3 "	Recurrent after labour—subinvolution, procidentia, retrover., persistent burning, aching, inability for work	"
26	"	Open "	2 "	"	"
27	Mrs. W.	" "	3 "	Pelvic, sacral pain, aching, burning, total inability for exertion, subinvolution, cervix shortened, red, swollen; procidentia, first stage of retrover. After one tube had involuted and closed, an operator excised her uterine appendages	"

¹ Collected and abstracted from Thornton out-patient records by Nurse Thornton.

Hypertrophic Open Tube.

No.	Name.	Tubes Post Partum.	Duration.	Remarks, Condition, &c., Found.	Result.
1	Mrs. B	Left Tube	3 months	Ovarian cystoma, tube stretched over tumour and enlarged to thickness of finger; patent throughout, as seen by sound passed through it at operation	Cured

Inflammatory Open Tube.

1	Mrs. A	Right Tube	—	Atrophic right tube like a cord, while left was distended by hydrosalpinx	Excised and recovered.
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a little gentle manipulation it is felt to enter the tube and may be passed up the hilt. Its point can now be felt with the other hand under the abdominal wall. The same proceeding diagnoses the condition of the other tube. But little or no pain is experienced by the patient, and I have never seen any bad consequences follow. In short, catheterising the tubes is an important part of the treatment. The general condition of the patient and the appearance of the vagina and cervix uteri are almost diagnostic, and from these I have again and again in my *clinique* pointed out cases where we should and did find open Fallopian tubes.

Before passing on to the principles of treatment, I may mention here the possibility of pushing by force the sound through the uterine wall. I believe that has been done, but the operator, if expert, generally knows when it happens. On catheterising the Fallopian tubes, no force at all is to be used; the sound is caught between one finger and thumb, and as much care and gentleness are to be taken as by the surgeon in trying to coax a bougie through a stricture of the urethra.

The prognosis and treatment of open Fallopian tubes are, as a rule, prolonged; not invariably so, for some respond rapidly to it, by an improved tone of health generally, and of the uterus. The etiology of the individual case will indicate the line of treatment. In the first place, and co-equal with the local treatment, the general health is to be attended to, just as in subinvolution of the uterus alone. Rest in the horizontal position, the hot vaginal douche to 120° F., thrice daily, and sedative and astringent medicated pessaries to givetone to the vagina, and keep the uterus as high as can be attained. If displaced, apply a Hodge whenever it can be tolerated, catheterise the tubes once a week, and cautiously feel the way to make intra-uterine applications by the copper probe. Avoid intra-uterine injections. Whenever the medicated probe is grasped by a firmly contracting uterus, it shows tone is returning to the organ, and the tubes will shortly close. As involution goes on, and the strength returns by tonic and dietetic treatment, the untoward symptoms slowly disappear, and the patient very gradually reaches recovery. In obstinate cases, more active local treatment has to be adopted both to the uterus and the uterine end of the tubes. But to enter more minutely into the details of treatment time does not permit.

The records of the history, general and local diseased conditions, as recorded in the tables of hospital and private cases, will demonstrate more fully the grand total of subinvolution of the uterus *plus* that of the Fallopian tubes, and more clearly than any set description can attempt. It has also to be borne in mind that these tables represent only about one-half of the cases seen by me in the same period, of which, in the busy run of work, no note has been taken, that is to say, for the last seven or eight years.

ANTISEPTIC OPHTHALMIC AND AURAL SURGERY.¹

By ADOLF BRONNER, M.D.,
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In speaking of antiseptic surgery we mean the method of operating or of treating a wound, firstly, so that we may prevent the entrance of micro-organisms into the wound (aseptic surgery); and, secondly, so that we may destroy or arrest the development

of the micro-organisms which may be in or near the wound (antiseptic surgery).

Since the interesting investigations of Lister, Koch, etc., we know that micro-organisms are the chief cause of suppuration in wounds, and that the constitution and state of health of the patient are not at all so very important for the aseptic healing of a wound as was and is now sometimes thought. I think that ophthalmic surgery, especially cataract operations, proves this fact in a very evident manner. If we operate with antiseptic precautions, we find that a wound of the cornea in an old and feeble person, say of 80 or 90, heals quite as aseptically—that is, with as little tendency to suppuration—as a similar wound would heal in a young and healthy person, say of 30 or 40.

In the *Mittheilung aus dem Kaiserlichen Gesundheitsamt*, vol. i, 1881, Koch published a very interesting article on "Disinfection." He shows that sublimate is by far the most powerful and useful antiseptic. In a solution of 1 in 5,000, it destroys in a few minutes the malaria bacillus, and also its spores. It prevents the development of the spores altogether in a solution of 1 in 330,000, and in a solution of 1 in 1,500,000 the spores develop very slowly indeed.

It is seventeen years since Lister first drew attention to the great importance of antiseptic surgery, but it is only within the last few years that ophthalmic surgeons have attempted to operate with all antiseptic precautions.

Of course, in operations on the eye, antiseptic precautions are not of such vast importance as in other operations. The wound is always relatively very small. The eye is covered by the eyelid, thus excluding micro-organisms, foreign bodies, etc. The wound is constantly irrigated by the tears, and the continuous secretion of aqueous helps to wash out the anterior chamber and to irrigate the wound.

The late Professor Horner, of Zurich, was one of the first to draw attention to the great importance of antiseptic ophthalmic surgery, especially in cataract operations, at the International Medical Congress in London, 1881. Of course, every ophthalmic surgeon has his own antiseptic "fads," if I may make use of the expression, and the antiseptic precautions used at the various ophthalmic hospitals are very different.

I think that I cannot better illustrate my ideas of antiseptic ophthalmic surgery than by recording in a few words the antiseptic precautions used at the Bradford Eye and Ear Hospital. That we have been fairly successful is proved by the fact that, out of over 900 major operations performed at the hospital in the last two years, including 218 iridectomies, 305 operations on the lens, etc., there was not a single case of suppuration. We have a large well-ventilated ward reserved for operation cases only—of course only non-suppurating cases—and no cases of diseased lids or suppuration are ever allowed to enter. The patient is admitted two or three days before operation. The eye is washed out every two or three hours with sublimate lotion (1 in 5,000). In this manner, not only is the conjunctival sac well disinfected, but also the sublimate has time to pass freely into the lachrymal sac, and destroy any micro-organisms which may be there. For most operations, of course, cocaine is used. Whilst under the influence of cocaine, the eye is bandaged, etc. The cocaine, eserine, atropine, etc., solutions are all made with sublimate (1 in 10,000 or 20,000), and thus the development of germs in the fluid is prevented. This seems to me to be of great importance. I have frequently seen cases in which every antiseptic precaution was most rigorously attended to, and then, just before the operation, some cocaine or atropine drops, loaded with micro-organisms, were dropped into the eye. For cataract opera-

Abstract of a paper read before the Yorkshire Branch of the British Medical Association at Sheffield.