after the commencement of pregnancy it is apt to cause a malformation of the foetus, if later intrauterine disease. It depends upon the stage of development the embryo has reached and the manner in which impressions are made upon it as to whether the result is an incomplete inter-ventricular or inter-auricular septum or whether the evolution of the large arterial trunks that rise from the aortic bulb is interfered with. The septum between the ventricles grows up as early as the fourth week.

It used to be taught that the placenta is a barrier to the passage of poisons from the mother to the foetus. Porak showed that this did not apply to some of the metallic poisons and in my own experiments of feeding pregnant animals with white lead not only did the foetuses die in utero, but in their liver was found lead on chemical analysis. It is thus, too, with poisons of a more subtle nature. The distinguished French obstetrician Mauriceau was born with the marks of small-pox upon his body and mothers are known to have transmitted the virus to their children in utero without they themselves exhibiting the disease. Maternal rheumatic fever may be followed by foetal endocarditis. To ante-natal endocarditis must be attributed some congenital defects of valves, such, for example, as when they are found glued together in infants who have died shortly after birth. As it is the right side of the heart that has the greater amount of work to do in the foetus, judging from its thicker walls, so it is therein we look for, and where we usually find, evidence of the consequences of ante-natal endocarditis.

Some congenital defects are more serious than others. It is impossible for the foetus to live outside the uterus with some of them. Free communication between the auricles or between the ventricles is not necessarily attended by danger to life, for the circulation is still capable of being carried on and considerable length of years may be reached without any symptoms at all. Cyanosis even may not be present. It is with congenital abnormality of the heart as with diseased hearts—the balance of the circulation has to be broken before symptoms arise. In morbus cæruleus in addition to cyanosis and clubbing of the fingers epistaxis is frequent. Gibson of Edinburgh has shown that the blood itself is altered; its specific gravity is often as high as 1070, its hæmoglobin may reach 160 per cent., and the number of red corpuscles may rise to 9,000,000 per cubic millimetre, nearly double the ordinary number met with in health. Children thus affected bear cold badly. They cannot get sufficient oxygen into their blood and consequently their body temperature is low. Not only are they cold-blooded, they are apathetic and lethargic and are with difficulty educated. Where a patent foramen ovale persists there may be no symptoms and no physical signs, but should the inter-ventricular septum be defective the circulation is apt to be impeded, for blood is thrown with considerable force into the right ventricle and distends this chamber and as a consequence there is often dyspnoea on exertion. The pathology of cyanosis is not yet quite clear. It is maintained that in congenital heart disease cyanosis is due to an intermixture of the two kinds of blood, arterial and venous, or to extensive venous congestion, and yet sometimes very imperfectly closed inter-ventricular septa are found on post-mortem examination without there having been cyanosis during life except in particular circumstances. It is a question of aeration. There is a difficulty of getting oxygen into the blood. This liquid exhibits its original foetal characters of retaining in its hæmoglobin excess of carbonic acid. The cyanosis, it seems to me, depends rather upon the physical and chemical constitution of the blood itself than upon defective circulation or upon admixture of arterial and venous currents, for although hæmoglobin is hæmoglobin under all circumstances yet in congenital cyanosis it never becomes the typical oxy-hæmoglobin that gives the bright red hue to actual blood. As the cyanosis is most marked in those cases of congenital heart disease where obstruction to the circulation existed long before birth it would seem as if the defect in the development of the cardiac apparatus had made itself felt upon other specially related portions of the mesoblast whereby the blood corpuscles at their inception have characters impressed upon them different to the normal.

Usually there is little or no difficulty in the diagnosis of congenital heart disease. Cyanosis at birth, and persisting, accompanied by clubbing of the finger ends and a tendency to epistaxis, suggests malformation of the heart. The difficulty consists rather in diagnosing the particular kind of

malformation. The area of cardiac dulness is usually enlarged. On auscultation there is frequently heard a loud prolonged systolic murmur over not only the whole of the præcordial area but the back of the chest and pretty well over the whole of the trunk. There may be a thrill, systolic in time, felt over the upper part of the area of cardiac dulness. The second sound at the base is oftener accentuated than not. Very rarely a diastolic murmur is heard at the base. These remarks apply to stenosis of the pulmonary artery and imperfect inter-ventricular septum, to incomplete inter-auricular septum attended by complications, and to patent ductus arteriosus. Where the ductus arteriosus remains pervious the rumbling systolic murmur is located mostly at the second and third left intercostal cartilages.

A good deal depends upon the nature and the extent of the malformation as to how long life will be maintained. If the defect in the heart is great the infant will probably die shortly after birth, but a patent foramen ovale or a slight incompleteness of the inter-ventricular septum is quite consistent with the attainment of great age. Several of my own patients reached the age of 40 years and presented no symptoms and had no discomfort until an intercurrent malady, like bronchitis or some pulmonary malady, developed, which disturbed the balance of the circulation. In some instances individuals who were the subjects of congenital malformation of the heart have reached the age of 70 years. Tuberculous disease of the lung is met with, particularly when there is stenosis of the pulmonary artery.

Treatment can only be conducted on general lines. Warm clothing must be worn, all violent exercise and undue exertion should be avoided, the diet should be carefully attended to, and complications should be treated as they arise.

A Lecture

ON

THE USES OF PARAFFIN IN PLASTIC SURGERY.

Delivered at the Medical Graduates' College and Polyclinic on April 3rd, 1903,

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GENTLEMEN,—It is now four years since Gersuny of Vienna invented the injection of paraffin for the cure of certain deformities and diseases. The whole subject cannot be got into one lecture; but I ask your leave to-day to say something first about the history of this method; next, about its practice; and finally, about its results.

HISTORY.

The whole credit of the discovery of this method must be given to Gersuny and to him alone. It is true that Delanger of Tournai, also in 1899, did experiment on himself, putting a little paraffin under a scar on his arm; but the man who worked out the thing and made it known to our profession was Gersuny and nobody else. He had been making experiments, from a therapeutic point of view, to see what was the effect of the injection of paraffin under the skin of animals; and he had found that the paraffin, once set, remained as a hard nodule, giving no pain and undergoing no apparent change. In May, 1899, he was consulted by a young man who wished to serve in the army but could not hope to pass his medical examination because both his testicles had been removed for tuberculous disease. Gersuny, by the injection of paraffin into each half of the scrotum, produced the appearance of the testicles and the young man had no difficulty in passing his examination. Gersuny's second case was that of a girl who had undergone an operation for cleft palate. The operation had been successful, but the palate was not long enough to touch the back of the pharynx and she could not sound hard *g* or *k*. He made some slight improvement of her speech by the injection of paraffin into the palate, so that it was thickened and brought nearer to the posterior pharyngeal wall. His third case was of the same kind, his fourth case was a sunken cicatrix, and

his fifth case was a sunken nose. He published these five cases, with a long list of suggestions for other uses of paraffin; some of them were extravagant and have come to nothing, but among them was the suggestion that it might be possible to cure incontinence of fæces or incontinence of urine in the female, by raising hard nodules of paraffin under the mucous membrane of the rectum or of the bladder. And in 1900 he published his first case of this kind—a vesico-vaginal fistula which he narrowed and made water-tight with paraffin, after seven operations had been done to close it and had all of them failed. Then came a disaster, a case of pulmonary embolism. Pfannenstiel, on Nov. 23rd, 1900, injected 30 cubic centimetres of paraffin into a prolapse of the bladder with vesico-vaginal fistula. It does not appear that the patient was anaesthetised, but, what is still more strange, when he had injected this very large quantity of hot paraffin all at one time into the loose vascular tissues round the bladder, he let the patient get up and go home. No wonder that she was attacked by pulmonary embolism on her way to the railway station. She recovered and then they found that the injection had failed to close the fistula. This unhappy case brought the treatment into discredit for a time. But in February, 1901, Kapsammer published three cases of incontinence of urine in the female, from various causes, all of them successfully treated, and in June, Moskowitz, Gersuny's assistant at Vienna, published more than 30 cases treated by Gersuny and himself without any disaster and with a very good amount of success. Observe how wide was the range of these cases. Clefts and fistulae were narrowed, cavities here and there were filled up, prolapses and herniæ were kept back, small-pox marks were taken out, sunken noses were remodelled, the falling in of the cheek after removal of the upper jaw was repaired, and a nerve divided for the relief of neuralgia was prevented from growing together again. This paper by Moskowitz is a wonderful instance of surgical zeal, almost of surgical extravagance, and in one or two of the cases there was more valour than discretion in the use of the paraffin. All the same, there is a long record of good and successful work, and it left not much more to be said.

That is the history of the introduction of Gersuny's discovery; and in this country the method is associated with the names of Walsham, Scanes Spicer, Ball, and Lake in London, Walker Downie in Glasgow, and Cathcart in Edinburgh. As for me, I published two cases last September in the *British Medical Journal* and to my amazement they were copied into the *Daily Mail* as a wonderful new discovery, and from the *Daily Mail* into all sorts of papers, including *Tit-Bits* and the *Woman's World*. The immediate result was that a great many cases of sunken nose came to me for treatment with paraffin; and I have already operated on 43 cases of sunken nose and three prolapses. But the whole invention of the method and its introduction into practice are Gersuny's work, and I ask you again to observe what a wide field of surgery he set himself to cover. If we could create fibrous tissue in the living body we should find a thousand uses for it and the use of paraffin is to build up in any accessible part of the body a structure that shall act like hard fibrous tissue. We may admit that the method has been carried too far in this or that case, but there remains a vast number of cases in which it has succeeded, though the usual operations of surgery had all failed or had been impracticable. It has been especially valuable in certain cases of fistula, in cases of prolapse, and in cases of sunken nose; and it is, for some of these tedious and miserable cases, a very happy discovery.

PRACTICE.

So much for the history of this method. Now for the practice of it and the rules that are to be observed in the making of these injections. Let me say, once and for all, that it is not so easy as it sounds, and that nobody ought to begin remodelling noses and bolstering up prolapses till he has thoroughly rehearsed the whole performance and has learned all the tricks of the materials that he is working with. Again and again something goes wrong just at the last moment: a syringe leaks or cracks, or the paraffin sets in the needle, or escapes above the piston, or oozes out again at the point where the needle went in, or fails to do what it ought. Let us take the whole subject in order: first the paraffin, next the syringe, and next the method of making the injection.

The paraffin, of course, must be sterilised by boiling before it is put in bottles. Everybody is agreed about that, but

then comes the question, Which is the best of the paraffins that are now in use? Is it Gersuny's which melts at 104° F., or Pfannenstiel's which melts at 115°, or Eckstein's which melts at 136°? This question has been argued at great length and with considerable vehemence and I will not trouble you with all the arguments. I am sure that Eckstein's paraffin is not the best. It is unmanageable, it is much too hot, and it has no special advantages. Gersuny's paraffin is easy to use; but I doubt whether it sets quite so quickly and so hard as it ought, and I doubt whether it would stay unchanged through a prolonged fever or a constant exposure to tropical sunshine. Moreover, there is some evidence, from experiments on animals, that it is safer to use a pure paraffin, not a mixture of paraffin with vaselin. So far as I can understand all these arguments about the different kinds of paraffin, I think that we had better use a paraffin that cannot be softened by any possible rise of the body-temperature and is not likely to burn the tissues. That is to say, it ought to have a melting-point somewhere between 108° and 115°. A point or two, this way or that, is no great matter. But where the paraffin has got to stand heavy and immediate pressure, as in the modelling of a sunken nose, there, I think, the higher melting-point is preferable. Where the strain and the pressure are less, as in the bolstering up of prolapsed mucous membrane, the lower melting-point will suffice.

Next, we must bear in mind that all paraffin shrinks when it sets. For example, the paraffin that is used for imbedding specimens, to cut sections, is always cupped and shrunk; and the same thing happens with paraffin injected under the skin or under the mucous membrane. Of course, the hardest paraffins shrink the most; but they all shrink more or less, except those that are too soft to be of general use. This natural shrinkage is inevitable; happily it comes to very little and in many cases cannot be detected.

Next, let us consider the syringe. Do we require a special syringe or can we manage with an ordinary antitoxin syringe? For the injection of paraffin into the loose sub-mucous tissue of a prolapse an ordinary antitoxin syringe works well; but it does not work well, at least in my hands, for the remodelling of noses. In cases of prolapse there is no great pressure on the paraffin; but in nose cases there is a good deal of pressure. In cases of prolapse no harm is done by a slight excess of paraffin or by a slight inequality in the distribution of it; but in nose cases you have to be more accurate. Therefore the wiser plan is to have a special syringe. The right sort of syringe for these injections can be worked easily with one hand; it cannot inject an excess of paraffin with a jerk; it retains heat well; it does not leak; and it can be sterilised by boiling. To insure these advantages it is made with two rests for the fingers; it has a screw-nut running on its piston-rod; it is jacketed with a bit of drainage-tube; its needle is screwed on to it, not merely plugged on or attached by a bayonet-catch; there is a little leather washer (leather, not rubber) between the needle and the syringe; and the several parts of the syringe are screwed or welded together, not merely stuck together with cement. A strong, straight steel needle, one or one and a half inches long, is employed, such as is used for exploring the pleura, shortened and fitted with a screw-cap for attachment to the syringe. A very good syringe is sold by Mr. Rogers of 327, Oxford-street, W.; he also keeps the sterilised paraffins.

The method of injection is much the same whether a sunken nose is to be remodelled or a sinus is to have its walls brought into apposition or a prolapse is to be held up. You melt the paraffin by putting it in water that is well above its melting-point but not hot enough to crack the bottle. You sterilise your needles and cleanse your syringes and test them carefully. I say syringes because it is well to have two in case of accidents. Then you put your melted paraffin and your syringes in a water bath at a temperature five or six degrees above the melting-point of the paraffin. An ordinary steriliser makes a good water bath and you must secure your bottle of paraffin with a loop of wire or some such contrivance to keep it from toppling over. Everything being ready you draw up four or five cubic centimetres of paraffin; then you hold the syringe under water while you adjust the screw-nut and press out a drop or two of paraffin to make sure that it is all right; then you dip your needle for six or eight seconds into water that is boiling or just off the boil; and then you make the injection. But of course it is one thing to be working at a sunken nose and another thing to be working at

a prolapsed bowel. Let me speak first of nose cases and then of cases of prolapse. Practically my experience is limited to these two kinds of cases.

1. *The remodelling of noses*—I have now done 43 of these cases. There have been no death, no embolism, no sloughing of the skin, and no wandering of paraffin into the eyelids, and the results are permanent and they are good. In some cases the improvement is really excellent, in some it is fairly good, and in some I have failed to do much good. In a very few I am sorry that I ever meddled with the case. In more than one case a good result ought to have been obtained but was not for want of more skill and better judgment. Some cases that seemed hopeless have done very well and some that looked very easy were found to be insuperably hard. Sometimes I have been pleased and the patient has been disappointed; at other times I have been disappointed but the patient has been pleased. It is anxious work and heavy responsibility altering the shape of people's noses and the more I see of these cases the more certain I am that you cannot manufacture perfect Greek noses out of nothing and that the surgeon must be content if he succeeds in making a nose that shall be merely unnoticeable. But do not think that it is a small matter to accomplish this much. You can enable a man to get work and to get a girl to marry him and to go through life without the incessant staring and chaffing that made him always unhappy and self-conscious. Remember especially that the man in the street takes it for granted that a sunken nose is proof positive of syphilis. I will not take up your time by repeating the miserable stories that some of these patients have told me—how they are out of work and badgered and ridiculed everywhere because they are so ugly. And it is even harder for the women. Of course, in some of these nose cases one may find something to laugh at; all the same it is a tragedy and the comic element, after all, is a part of the tragedy. So one has to take these cases seriously and in the treatment of them it is wisest not to promise too much but to say that you will do your best to improve them so far that they shall be able to go through life unnoticed and free from contempt and chaff.

Now let me say something first about the different kinds of sunken nose and then about the method of injecting the paraffin in these cases. I will not describe the causes of sunken nose. Doubtless the chief causes are injury, inherited syphilis, and acquired syphilis, but there remains a set of cases where the history is of this sort, that the patient had an abscess in the nose when he was a child and then the bridge of the nose fell in or never grew up. These cases are not, I think, syphilitic and they seem to show that the nasal bones in early life may be attacked by that acute inflammation which we call in the long bones acute osteomyelitis, or acute epiphysitis. There is also another set of cases where you get no history at all. The patient was "born like it"; he "never had a bridge to his nose"; he may have injured it, but every child knocks his nose some time or other. Anyhow, there are no history of acute destructive inflammation and no evidence of syphilis, only the nose has always been flat ever since the patient was a baby. These cases seem to point to a real arrest of development either from some slight injury or from some transmitted influence of which we know nothing.

There are two principal forms of sunken nose. In one there is no bridge to the nose, the nasal bones are flat, and the whole nose is ape-like—what the Germans call a "saddle nose"; in the other the bridge of the nose is intact but the soft tissues between the bridge and the tip are sunken as though a bite had been taken out of the nose just below the bridge. Let us call the first form the bridgeless nose and the second form the indented nose. And I wish here to say that I have lately seen two cases of this indented nose, in one of which the deformity seems to have followed the ordinary operation for adenoids; in the other it followed the application of perchloride of iron to the inside of the nose to stop bleeding after an operation on the inferior turbinates. I only tell you what I was told and I cannot understand how the removal of adenoids could cause indentation of the nose; but in the second case it seems certain that the perchloride of iron had burned a hole through the septum nasi and had brought about a very ugly sinking-in of the lower part of the nose. This case where the septum was perforated leads me to speak of perforations of the septum in their relation to the use of paraffin. A small perforation, or even a perforation as big as a sixpence, makes no difference to the success of the injection. Of

course, there are cases of old syphilitic necrosis with a large hole in the hard palate and all the inside of the nose wrecked and destroyed and the nose all shrunken and crumpled up where you cannot get a good result. I will speak of these cases in a minute or two, but the point which I wish to make here is that a simple perforation of the septum, even a large one, does not in any way interfere with the remodelling of the outside of the nose. So long as you can get your needle between the mucous membrane inside and the skin outside you may improve the looks of the patient. Only the skin must be loose, not cicatricial. That is the one thing more important than everything else. What is the condition of the skin? It matters little whether you are dealing with a bridgeless nose or with an indented nose; and sometimes the cases that look the worst do the best. It all depends on the state of the skin. If it is fairly loose and soft and healthy, if you can pick it up between your finger and your thumb, then you can be sure of doing good. Try raising the skin between your fingers, drawing it forward into position, and you will see in a moment whether your injection will be successful, for if you can raise the skin then the paraffin can raise the skin and keep it raised. But if the skin is tight and hide-bound and rigidly contracted, as it is in elderly people whose noses have been sunken for nearly half a century, or, still worse, if it is cicatricial and immovably fastened by adhesions to the deeper tissues, then you will never make that patient good-looking and you are in danger of failure and great disappointment.

The most favourable of all cases are those in which there are an abundance of loose healthy skin and a fair length of face between the forehead and the mouth and a well-shaped and refined tip to the nose. The most unfavourable cases are those where the nose is shrunken, shrivelled, and cicatricial and, as it were, crumpled up by old syphilitic necrosis. Between these two extremes there are all sorts of cases: some where the nasal arch is splayed out on either side of the face, making an unsightly ridge under each eye; some where the nose is not only sunken but also crooked; some where the tip of the nose is wide and clumsy and out of proportion to the rest of the face; and some where the face is so short and square that there is not much room to work in. You may find it necessary to straighten the nose or to do some plastic operation before you make use of the paraffin, or you may have to inject the paraffin not once but twice or even three times. And you must not expect that you can work miracles. It is better to do too little than to do too much; it is better to set yourselves to make not perfect noses but unnoticeable noses. Be content if you can raise a decent-looking bridge or if you can *almost* obliterate an ugly indentation below the bridge.

I come now to the method of injecting the paraffin in these nose cases. Prepare everything very carefully and even then expect that something will go wrong at the last moment. In most cases I insert the needle low down, just above the tip of the nose, in or near the middle line, and inject upwards; for I feel sure that I cannot then wound the transverse nasal vein, nor can the paraffin run into the tip of the nose. It is a good plan to prick the skin first with a fine surgical needle set in a holder; this enables you to introduce the paraffin-needle gently and accurately. It is also a good plan just before you make the injection to dip your needle for six or eight seconds into water that is boiling or just off the boil as this prevents the paraffin from setting in the needle. The injection must be made rather rapidly, say, at the rate of one cubic centimetre every 8 or 10 seconds, so that you may get all your paraffin soft at the same time and may mould it altogether. How much paraffin does it take to raise a sunken nose? I have said elsewhere from 8 to 10 cubic centimetres. This is too much. I do not deny that some noses, even with this quantity, still remain somewhat sunken. The paraffin will not all run in and some of it is wasted and that which does run in does not produce the desired effect. These are the unfavourable cases where the skin is shrunken, hide-bound, or cicatricial, but in a favourable case where the skin is loose and healthy you may raise it satisfactorily with two or three cubic centimetres. While you inject the paraffin your assistant presses his fingers and thumbs hard and tight over the forehead, the eyebrows, the inner angles of the orbits, and the sides of the nose, keeping out the paraffin by hard pressure from these forbidden regions. You make the injection, you wait a few seconds to let the puncture become sealed, you withdraw the

syringe and put it back in the water bath, then you take the nose and mould it vigorously while your assistant lets cold water trickle over it. Do not be too gentle over the moulding; squeeze and work the nose this way and that, and do not leave off for a good 10 or 15 minutes, till everything feels absolutely rigid. Then lay a mask of cold wet lint over the face and change it frequently. A few days later, if you want to add a little more paraffin, you can do it under cocaine only, but do not attempt it unless the skin be fairly loose or you will do more harm than good. If by mischance a small quantity of paraffin has run astray and has set where it ought not, and remains as a little nodule under the skin you can dissect it out like a little sebaceous cyst. I had to do this in one of my cases and it was easily done; but it would not be so easy if this mischance were to happen in the eyelid. In one of my cases, and in one only, a small abscess formed nearly a fortnight after the treatment; it looked very bad at the time but the final result is very good. In three cases the line of puncture of the needle broke down, but this is not a serious disaster. In all my 43 cases I have had no serious disaster, no sloughing or embolism, or any terrible thing to record. Only I have failed in a large number of cases to make the nose handsome and in a very few I have done no good at all. No two cases are alike. In one or two I gained something by freeing adherent points of skin with a sort of tenotomy needle; in one I gained something by inserting the paraffin needle into the nostril and making the injection from within outward. But there are cases where you cannot accomplish a good result, do what you will. You cannot raise the skin of the nose unless the skin is there to be raised and is loose enough to rise.

2. *The holding up of prolapses.*—Give me a few minutes more in which to speak of this use of paraffin. I have had only three cases, but the results were so good that the method certainly deserves consideration. My patients were all over 60 years old; one had prolapse of the bowel after excision of the rectum for cancer, one had prolapse of the bowel of 22 years' duration, and one had suffered for 28 years from prolapse of the uterus. I need not say what an amount of misery these three old people represent. And, to my amazement, they have all of them been cured. It is too soon to be sure that they will not need another injection later; but, for the present, there they are, wholly free from what had seemed incurable troubles. The paraffin, in these cases, must be injected immediately under the mucous membrane of the prolapse, so as to raise and to thicken and to stiffen it and to narrow the passage through which the prolapse comes down. With a prolapse of the bowel I think it is a good plan to take a fold of the prolapse between one's finger and thumb, and to endeavour to make two or three well-defined round masses or hummocks of paraffin which shall form a sort of valve or partial stricture just inside the anus. In a bad case you may have to inject the paraffin at diverse levels and for some distance above the anus. Of course, you do not dilate the anal opening; it is over-dilated already. Indeed, in one of my cases I combined with the injection of paraffin Mayo Robson's incision and deep suture to narrow the anal ring. Having injected the paraffin to the best of your judgment, so as to thicken and to stiffen and partly to occlude the lower two inches of the bowel, and, as it were, to produce the feel of a hard smooth growth involving half or two-thirds of its circumference and reducing its calibre, you put in a morphia suppository and keep the bowel up with a pad of wool and a T-bandage and treat the case as you would treat a case of hæmorrhoids after operation. Of course, a bad prolapse with great dilatation of the anus may require a considerable quantity of paraffin—say, three-quarters of an ounce or a whole ounce—and, in addition to the injection, Mayo Robson's incision. And, of course, you keep your paraffin away from the bladder and ureters and put it mostly under the posterior and lateral folds of the everted mucous membrane.

With a prolapse of the uterus I think that one ought not to inject the paraffin if the patient can be made quite comfortable and content with a pessary, for there is, I suppose, a very slight risk of embolism. Perhaps this risk of wounding a vein could be met by a preliminary puncture with an ordinary needle at the point where the paraffin needle is to be inserted. The general procedure in prolapse of the uterus is much the same as in prolapse of the bowel, only, of course, it may need a larger quantity of paraffin; in my one case I used nearly two ounces. The injections should be kept away from the bladder and urethra, and during the injection into the posterior vaginal wall a finger should

be kept up the rectum in order that it may not be wounded. The bulk of the paraffin should be put under the mucous membrane of the posterior vaginal wall and of the posterior part of the vaginal cervix and at the sides of the vagina. If there be an old rupture of the perineum it may need to be repaired. The success of my case astonished me, for I succeeded in making the vagina so narrow and so strong that the uterus remained high up and fixed, even during hard straining, and this in a woman over 70 years of age in whom the prolapse occurred if she only sneezed or turned over in bed. Of course, this method must not be used for women who may yet conceive and the vagina must not be so narrowed as to impede coition.

RESULTS.

The results in the only kinds of cases of which I have had experience are certainly good. I confess that in a very small proportion of the nose cases they have not been favourable, but in all save these they have been good and many of them have been very good. The prolapse cases are few but they have given excellent results. Doubtless in this or that case of sunken nose it would have been better instead of injection or before injection to do one of the plastic operations that Mr. W. J. Walsham has lately described in *THE LANCET*,¹ but on the whole the use of these injections has answered thoroughly well; only, to raise a sunken nose you must, above all else, have skin that is loose enough to rise. As for cases of prolapse it seems difficult to over-estimate the good that can be done by this method, only it is not so easy as it sounds.

ABDOMINAL HYSTERECTOMY FOR MYOMA BY DOYEN'S PROCEDURES.

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It is some years ago that Dr. Doyen described his method of complete abdominal hysterectomy. The structures are rapidly divided between clamp forceps, a posterior flap is cut downwards into the posterior vaginal fornix, then the cervix is seized and hauled up, and the tumour is gradually made to turn a sort of somersault over the pubes. This method has seemed to me specially well suited for the cases mentioned below. In several of them the diagnosis had not been reached with any degree of certainty, in one case at any rate an erroneous one had been made, and on opening the abdomen inflammatory complications much obscured the anatomical conditions. Nevertheless, removal was accomplished with very little hæmorrhage and without interfering with the bladder and ureters. In these cases, except in one, there was no difficulty in excluding pregnancy. As regards the removal of the uterus, none of the women could possibly have had a viable child, and the occurrence of pregnancy would have rendered their case much more dangerous still. Vaginal and partial abdominal operations were out of the question. The abdominal operation at present most commonly adopted appears to be that of cutting across the cervix uteri. To do this one has to work from the pelvic wall inwards towards the cervix and in doing so branches of the uterine artery may be torn across deep in the pelvis or the ureter pushed inwards and either included in the clamp or ligatures, or indeed divided. In cutting across the cervix there is only a small communication with the vagina by the cervical canal, but the wide communication consequent upon removal of the whole cervix is not a source of septic inflammation if the vagina has been rendered aseptic beforehand. Indeed, with the vagina rendered aseptic the wider communication between it and the sub-peritoneal wound may aid drainage, for otherwise blood and pus may be retained owing to the narrowness of the cervical canal. In the one pregnant case, where maceration of the fœtus had already commenced, complete removal with the membranes unbroken preserved the wound from any contamination. As an additional reason for removing the cervix there is, perhaps, in some cases, a chance of the remaining cervix becoming malignant. In none of the cases

¹ *THE LANCET*, April 4th, 1902, p. 957.