

The following is a brief report of a case occurring in my practice:

Patient.—Mrs. H. of Walton, Ind., a patient of Dr. Carpenter, was operated on for gallstone disease on March 19. The symptoms which had led the family physician to the diagnosis of gallstones were those which are observed usually in such cases. There had been present gallstone colic, left-sided pains (suggestive of adhesions between the pylorus and the gall bladder) and shoulder pains, followed by nausea and vomiting. There were jaundice and digestive disturbances, muscular rigidity and bile pigment present in the urine as shown by Baudouin's test, also by Loeffler's blue.

Operation.—When the abdomen was opened the gall bladder was found enlarged and adherent and drawn toward the median line of the body lying in immediate relationship with the pylorus. The gall bladder was opened in the usual way. Gallstones were found, and during the removal of these the scoop caught on a mass of what seemed at first to be a very stiff string of organized fibrin occupying the lumen of the organ. On removing this with artery forceps it was seen that the tough fibrin containing bile solids surrounded a stiff, pointed object which later was found to be an ordinary short sewing-needle.

How the needle came into the gall bladder is not known. It is presumed that the woman swallowed it, but this, of course, is only a hypothesis. The woman was accustomed to use needles like that found in her work and had occasionally put such objects into her mouth, as most women do, but does not remember having swallowed a needle. If the needle was swallowed it might easily have found its way into the gall bladder in the manner suggested above.

The body of the gall bladder is, as is well known, in relation by its under surface with the first portion of the duodenum, occasionally with the pyloric end of the stomach and the hepatic flexure of the colon. The needle might have traversed the wall of the intestinal canal proper in any one of these three portions and found the wall of the gall bladder in immediate apposition with the canal, which it had just left. It does not seem at all likely that the needle backed up stream, so to speak through the ampulla of Vater, the common and the cystic ducts. To any one familiar with the causation of gallstones, the probable relationship of the presence of the needle to the stones will be clear. It is quite fair to assume that such a foreign body as the needle, having carried in infection, could provoke sufficient inflammation of the gall bladder and ducts with consequent obstruction as to lead to precipitation of the bile salts and gallstone disease. There were no stones in the ducts and the symptoms, as might be expected, have quite disappeared.

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The Lachrymal Glands at Various Ages.—A. Goz (Inaug. Diss., Tübingen, 1908), has made an exhaustive study of the human lachrymal glands in male and female of various ages. The tissues were fixed in concentrated sublimate or in formalin; paraffin sections stained in iron hematoxylin and Delafield's hematoxylin and benzopurpurin B. Age bears a direct relation to the size and structure of the glands. The largest were found in women of about middle age. The size of the glandular epithelium decreases after the first year, producing a widening of the glandular lumen. In advanced age there is an increase of connective tissue and an invasion of the glandular substance. It is not uncommon to find in the aged the glandular tissue thus split up into a number of islets but normally glandular degeneration from this source does not occur. The lachrymal glands of the female have a larger average size and weight than those of the male.

REMOVAL OF AN EMBOLUS FROM THE COMMON ILIAC ARTERY, WITH RE-ESTABLISHMENT OF CIRCULATION IN THE FEMORAL

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Patient.—Mrs. H. S., aged 41, was admitted to Mercy Hospital at 1:40 p. m., April 29, 1909.

Family History.—Father alive, well, aged 77; mother died at 42 of pulmonary tuberculosis.

Personal History.—The patient was born in Germany and came to Chicago twenty-five years ago; married at the age of 26; habits good; used no alcoholic liquors. Menstruation began at 14 and was until one year previous of the regular twenty-eight-day type; lasted four days; quantity moderate. In the last year the patient had had seventeen periods; flow scanty; last menstruation March 8, 1909; diminished in quantity. She had one child 9 years old; forceps delivery; was confined to bed five weeks; had cholecystic infection in the puerperium and was jaundiced for three months.

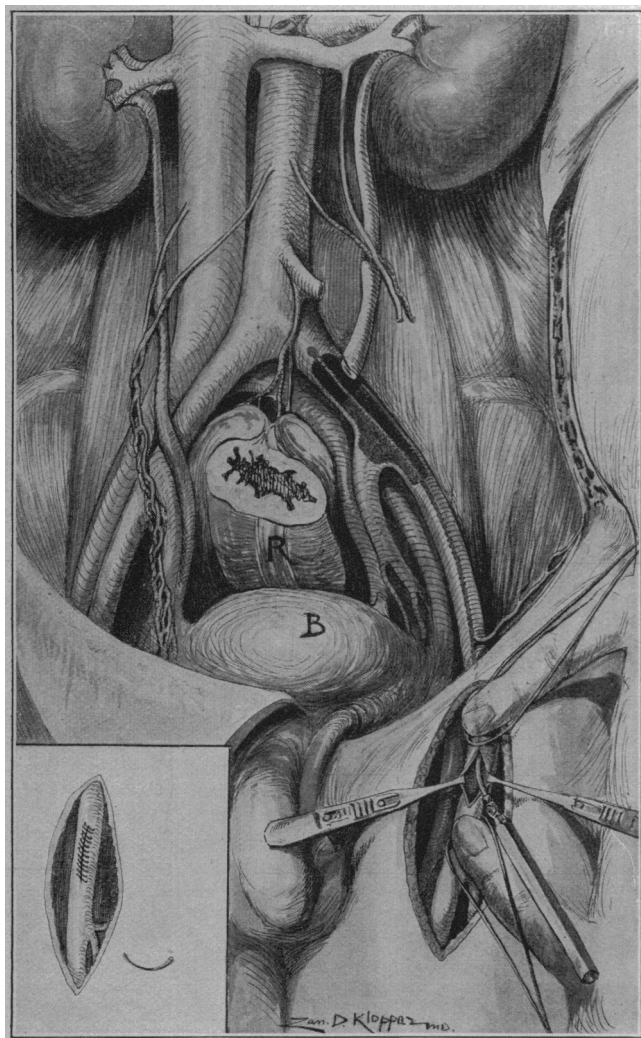
Previous Illness.—The patient always had good health up to about five years before the present illness, at which time she had acute rheumatism which lasted four weeks; she had a second attack two years later. The patient was not confined to bed in either of the illnesses and did not know that the endocardium or valves were involved. Following this attack she had shortness of breath and consulted a physician who said she had heart trouble.

Present Illness.—On April 25, 1909, the patient was seized with a sharp pain in the lower part of the left side of the chest and upper abdomen, which later extended down to the pelvis. It was considered pleuritis and the patient was given opiates. The pain continued in the lower part of the abdomen after that in the upper part had entirely disappeared, which would rather controvert the idea of a splenic infarct. On April 26, between 9 and 11 a. m., the patient became nauseated and vomited five or six times; did not have a chill and did not believe she had an elevation of temperature. One hour later both the left and right legs began to pain. A physician was called, and he gave a hypodermic injection in the left leg in the region of the pain. Both legs became cold and remained so until the following morning, when the pain in the right leg ceased and it regained its normal temperature. The left leg remained cold, was blue in the thigh and very pale and shriveled in the toes, foot and ankle. It was cold to midway between Poupart's ligament and the patella. There were large blue blebs scattered over the middle third of the thigh.

Examination.—At the time of admission to the hospital the pulse was 82, respiration 26, temperature not recorded. After the operation pulse was 76, temperature 98, respiration 26. At 4 p. m., April 30, pulse 84, temperature 98.6, respiration 28. May 1, at 4 p. m., pulse 82, temperature 99.2, respiration 26. A careful examination on admission showed that the patient had a mitral, direct and regurgitant murmur. Examination of blood showed 15,400 leucocytes; hemoglobin, 85 per cent. There was no pulsation in her left femoral artery. The upper margin of the area of demarcation that appeared then was about four inches below Poupart's ligament. The limb was undergoing dry gangrene, due to ischemia from arterial obstruction. The patient was immediately taken to the operating room and it was decided to remove the embolus that was occluding the iliac artery.

Operation.—(2:30 p. m., April 29.) The patient was placed on the table with the hip slightly elevated. Nitrous oxid was given for thirty seconds, while an incision four inches long was made downward from an inch above Poupart's ligament parallel to the femoral artery. It extended through the skin and connective tissue. The anesthesia was then stopped, the dissection continued and the femoral artery was exposed for a distance of 2½ inches. It was edematous, easily freed from neighboring structures and two provisional catgut ligatures were thrown around it with an aneurism needle but were not tied. These were used in

preference to the Crile clamp so as to aid in elevating the artery, which was then incised for one inch parallel to its long axis. It was completely thrombosed. With a delicate forceps the clot (a bifurcated plug an inch and a half long) was drawn from below upward, when fresh arterial blood came from below, evidently collateral, through the femoral profundus. A finger was then placed on the lower end of the vessel inside the ligature loop, as shown in the illustration, so as to compress it and stop the return blood and still not injure the intima. With a delicate forceps I began extracting the clot from the proximal side; the artery did not empty. A delicate spoon was then introduced and more clot withdrawn, but no arterial blood came. Then a No. 6 soft catheter was introduced; it passed up a distance of seven and a half inches and was withdrawn filled with grumous, bloody debris, but no arterial blood followed. It was reintroduced but could not be forced through



Location of the clot and direction taken by the sound shown semi-schematically.

a resistant body at that point. An ureteral catheter was then inserted; it met resistance at the same distance as before, but was forced through the thrombus and passed up nineteen inches, thus catheterizing the abdominal aorta. A small quantity of arterial blood followed its withdrawal. A uterine sound was then introduced. At a distance of seven and one-half inches it met resistance. It was forced a half inch farther, and on its withdrawal a large quantity of grumous, thrombotic debris came, but no arterial blood. It was pushed a little farther on and met a firm resistance. No blood followed its withdrawal. It was introduced for a third time, and with a little additional force at eight and one-half inches it seemed to pass through into a free space. This was followed by an intense arterial flow, carrying with it a lot of

embolic debris and fresh, bright blood. The arterial flow had then all the pressure and quantity of a normal femoral artery. The finger was then inserted in the ligature loop on the proximal side to stop the bleeding. With a fine silk suture on a full curved conjunctival needle a rapid continuous suture of the linear incision in the artery was made. On removing the digital pressure it oozed a little between the second and third stitches. Two additional supporting stitches at this point completely controlled the hemorrhage, and pulsation could be felt throughout the vessel. Unfortunately this operation was four days after the embolus was arrested in the common iliac just below the bifurcation of the aorta. The skin was necrotic and the limb cold to eight inches above the knee.

Postoperative History.—After the patient was removed to her bed she complained of pain and burning in her toes and ankle, the first sensation she had had in any of those parts since the onset. Considering the ease with which this clot was removed from the second inch of the common iliac artery, it is very much to be regretted that operation was not performed early in this case and in all of these cases. The operation was done without an anesthetic practically, and can be done painlessly with a little cocaine or salt solution injected into the skin. The collateral circulation was evidently making a great effort to establish itself, for as soon as I removed the plug from the junction of the deep and superficial femorals in the lower portion of Scarpa's triangle, the blood returned from the distal side. The suture of an incision in an artery is as simple as the suture of an intestine, if a sufficiently small needle be used. This I demonstrated in 1896, at which time I made the first successful end-to-end union of an artery that had ever been made, excising half an inch of the femoral artery at about the same point where I incised it to-day. At the line of demarcation the circulation was improved immediately after the re-establishment of the flow, becoming well marked a considerable distance lower; the amputation was made four days later four inches below the line of bleb formation that existed at the time the embolus was removed, and the flap survived. The circulation in all the smaller vessels at the line of amputation was fairly well established, but the trunk of the femoral was occluded by a loose, non-adherent clot, showing that it was the result of the suppression of the circulation from below or backing up of the blood which caused the thrombus, and not an inflammatory condition.

In cases of aseptic embolism immediate removal by division of the artery at the line of the embolism or below it should be resorted to. These emboli produce mere mechanical obstruction and the circulation is at once re-established by their removal.

The symptoms which indicate the occlusion of a large artery are, first, pain; second, ischemia of the limb; third, cooling of the surface; fourth, absence of pulsation in the arterial trunk. The number of hours that may elapse before a tissue becomes incapable of restoration has not been definitely determined, but from the length of time a constrictor may be kept on a limb for the suppression of hemorrhage and the vitality of the limb restored, we know that many hours of complete suppression of the circulation is not incompatible with restoration of the life of the tissues.

Since 1896 I have had two additional end-to-end sutures of arteries, one of the femoral in Scarpa's triangle for a bullet wound, and another of the first portion of the axillary just below the clavicle. In both end-to-end union was effected by my suture method and the circulation in the extremity promptly restored. A little over five years later all three of these end-to-end unions were examined by Dr. Neff and the circulation in the extremities was found perfect. I have also had a lateral suture of the external iliac and axillary arteries with good results. In September, 1908, a successful end-to-end anastomosis was made of the femoral artery into the femoral vein for endarteritis obliterans.

Since I published my original experiments and results in this line and demonstrated the feasibility of this work, Payr, Hoeffner, Exner, Ullman, Carrel, Guthrie and others have supported the practicability of arterial suture and demonstrated that extremities and organs can be transplanted and the circulation maintained, if accurate suture of the arterial and venous trunks is made. The transplantation of organs must adapt itself best to embryologic ectodermic and endodermic glands, as their function is essentially a cellular one and not materially dependent on nerve supply, just as in horticulture the product of the graft depends on the "epithelial" cells in the bud, and these are maintained through nutrition derived from the engrafted trunk, the "epithelial" cell producing its normal or physiologic product.

In the removal of septic infarcts there is little to be gained in a practical way, as they are usually multiple. With the infarcts resulting from acute or chronic vegetations on the cardiac valves, good results should be obtained. Even cerebral ischemia should be amenable to this treatment, when due to an embolus arrested in the common or internal carotid by opening the common carotid and aspirating through a catheter; or a subclavian clot by incision of the axillary artery.

I believe that aspiration through a catheter is a better means of removing the plug than the one which I adopted. If the catheter is divided on the slant with its end open it can be readily introduced into the artery; unless the embolus is extremely hard it can with suction be drawn into or fragmented by the catheter and thus the artery freed.

Incision into the artery at the seat of arrest of the embolus, if it has been there for any length of time, is not an advisable procedure, as I found in my experiments that when a thrombus rested any considerable time on the intima it roughened it and increased its tendency to subsequent thrombosis. Therefore, the artery had better be divided above or below (preferably the latter) the point of impaction of the embolus. A gradual occlusion of the circulation does not produce gangrene in the extremity. In the British Museum are specimens showing that in gradual occlusion of the thoracic and abdominal aorta by cicatricial masses an abundant collateral circulation was developed sufficient to compensate for the occluded artery. It is the sudden ischemia that causes the gangrene.

The curved needle of the conjunctival type, which has its cutting edge easily rubbed off on a whetstone, is a good type of needle for deep work. A straight needle is difficult of insertion, and an "extremely fine needle" is not a *sine qua non* to arterial suture. After the removal of the Crile clamp or the digital compression there is often considerable oozing through the stitch holes. A gauze compression for thirty or forty seconds will completely stop all this bleeding. Silk should be used and not animal suture, as a clot rapidly forms around the silk, plugging the stitch hole.

The diagnosis of embolism of the mesenteric artery has never been made early enough to have this procedure available as a life-saving measure, but let us hope. Here, as in other types of emergency surgery, the operation must be timely in order to be successful. This applies particularly to the cerebral ischemias. The removal of an embolus from the pulmonary artery by Trendelenburg, while it terminated fatally, deserves special mention.

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Clinical Notes

FAVUS TREATED BY BACTERIAL INOCULATIONS

PRELIMINARY REPORT OF A CASE

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This case of *tinia favosa* is perhaps particularly interesting, because, so far as my knowledge goes, there is no case of favus on record in which the opsonic treatment has been used.

Patient.—When the patient first came to my office, which was about Oct. 3, 1908, he presented a classical picture of the disease. The eruption, which is shown in Figures 1 and 2, was very extensive. The lower extremities were affected in the same proportions, particularly below the knees. The nails on both fingers and toes were also involved, which gave the patient continual annoyance. The characteristic "mouse" odor was evident. The patient's general condition appeared about normal. For twenty-three years he had suffered continually without any relief, except for very short periods of slight improvements during the first three years of the disease.

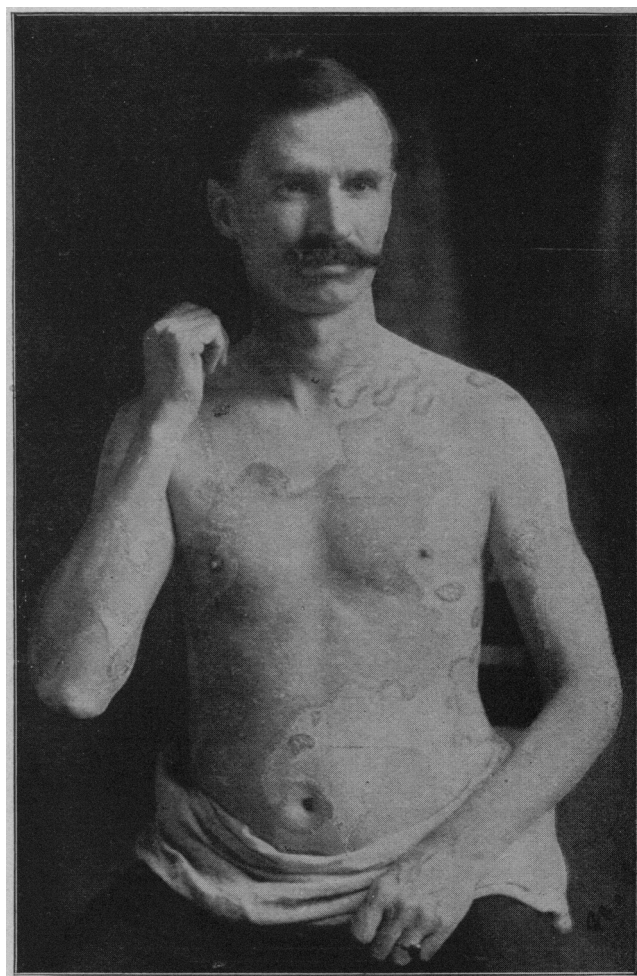


Fig. 1.—Patient with *tinia favosa* from photograph taken before beginning of treatment.

Examination.—Microscopic examination of the scales revealed the presence of the *Achorion schönleini*. It was decided to isolate the specific fungus of this disease and prepare a bacterial vaccine from it. A culture from the scales planted on agar and grown in the incubator for seventy-two hours gave the characteristic culture, microscopic examination of which revealed a mixed culture of the *Achorion schönleini* and *Staphylococcus aureus*.