

In operating below the knee pressure on the femoral artery in the groin, if properly applied, should satisfactorily control bleeding. It is more difficult to find the main vessels in this region than in the thigh, because of their proximity to the bones and because of the tendency to retract, but the difficulty is not great. In the upper limb there should be no difficulty in obtaining a good purchase over the brachial artery digitally. It is common to find a good deal of firm fibrous tissue extending for some distance up the line of the greater vessels. This causes so great a diminution of the lumen that no digital pressure may be required at all, but it is wise for someone to be ready to apply it in case of need.

The Operation.

I have found the following points of practical value in re-amputating:

1. Avoid a terminal scar. It is usually easy to achieve this in the thigh, but it is otherwise in the leg, if amputation has previously been performed fairly high up. Sometimes, owing to lack of skin, it is not possible to avoid a terminal scar and yet retain enough bone for the fitting of the artificial limb. The scar must take its chance, so as to preserve the joint, in such a case. But troublesome adherence may be avoided by guarding against infection, and also, possibly, by including a thin layer of muscle in the flaps; a retention suture left in for a few days will tend to prevent the scar from adhering in the wrong way to the bone; the retention suture should be guarded with rubber tubing to prevent it from cutting into the skin.

2. It is rarely necessary, and probably rarely wise, to include muscle in the flaps. A good fibrous pad is formed between the skin with its integuments and the sawn end of bone.

3. Re-amputate clear of the disability for which re-amputation is being performed, and try to make sure that no further operation will be necessary. The object of re-amputation is to get a good sound serviceable stump. It is far better to sacrifice a little extra bone, provided it can be spared, as it usually can, than to risk a poor result with the possibility of yet another re-amputation having to be performed some weeks or months later, just because the operation has been too close to or within the danger zone. Therefore the flaps should be cut clear of the scar unless there is some real reason in a special case against such a procedure. The scar especially should be avoided if there is the slightest suspicion of sepsis.

It would appear that pathogenic micro-organisms may lie latent in scar tissue for considerable periods. According to Huggins, the clinical evidence that a stump is ready for re-amputation is the disappearance of oedema from the skin and deep structures. It may be necessary to cut through and often include in the flaps the deeper scar tissue and sometimes lateral scars, but the scar in relation to the end of the bone should be avoided.

For the thigh I have usually employed antero-posterior flaps, the anterior one being the larger and forming the pad for the newly sawn bone end. Rarely if ever is it good treatment to dissect the adherent scar off the bone end, undercut the skin, and suture, leaving the bone intact. Even if the end of the bone be healthy, such a scar is likely to be terminal and to re-adhere, thus reproducing the former disability.

4. In dealing with terminal sequestra a difference must be made between those cases in which there is little or no active sepsis present and those in which sepsis is pronounced.

5. Re-amputation should not be performed in presence of a really actively septic wound. Healthy granulation is not a contraindication, but a really septic granulation surface should be considered a danger signal. The folly of hastening matters in such cases has been proved. The new wound, in spite of the greatest care during operation, is very likely to become septic, the lymphatics presumably being loaded with micro-organisms. The patient may develop general toxæmic symptoms, and the wound will in all probability break down. In many such cases another re-amputation will be necessary at a much later date. Thus time will be lost, an unnecessarily short stump will result, and health will be at least temporarily impaired. In operating on cases where healthy terminal granulation existed, I have been in the habit of swabbing it with pure carbolic, and then covering it over with gauze clipped on to the skin before starting to cut the flaps.

6. If the wound fills up with clot—for example, after a reactionary hæmorrhage—it is well to open it right up under a general anaesthetic, clear out the clot, re-suture, and drain in the usual way. Otherwise there will be great risk of a septic state ensuing.

7. If skin is scanty, and if it is important to preserve the length of the stump with a view to future function and fitting, extension may be applied by means of glue or strapping stretching from the stump to some form of wire splint. This may be in use for days or even for weeks, prior to operation, and a considerable gain may be achieved.

8. In amputation a short distance below the knee it is well to apply a posterior splint before the patient comes out of the anaesthetic, for there is a great tendency for the knee to assume the flexed attitude of rest, and, if convalescence be delayed, a certain amount of contracture of the hamstrings, often difficult to overcome, may take place.

9. If sepsis appears in a mild form after operation, fomentations or Carrel's treatment may be applied for a few days.

10. If re-amputation has to be performed in presence of a sinus only very mildly septic, or if the muscles do not look very healthy on section, a flavine pack will be found of value, the wound being left open with a view to delayed primary or secondary suture later. Or bipp may be applied, suturing the wound and providing drainage for serious oozing for a few days.

11. In amputations below the knee the anterior edge of the tibia should be bevelled so as to prevent the sharp edge from pressing on the anterior flap. It is important also to divide the fibula about a quarter of an inch higher up than the tibia, otherwise fitting of the artificial limb will be interfered with. According to Huggins it is important to preserve the interosseous membrane so as to prevent outward displacement of the fibula.

12. My usual routine, before suture of the wound, has been to swab the fresh raw surface with ether, which, besides acting as an antiseptic, tends to encourage bleeding, so that small vessels which might lead to troublesome bleeding later on can be ligatured at the time of operation. Ether tends also to show up unhealthy muscle by the fact that it may not react so well to the stimulus. This especially applies to avascularized damaged muscle seen soon after the infliction of the primary wound. The wound is then closed and sutured accurately. A narrow rubber dam is introduced at each end of the wound. These drains are left in for two or three days and then removed provided no sign of infection has appeared. A thin rubber dam provides very efficient drainage and is much to be preferred to tubing in most cases.

In my series of cases the average time of operating since the last amputation has been about six months, ranging from two to thirteen months. No doubt time is an important factor from the point of view of latent sepsis, but my experience tends to show that the clinical condition of the stump is of even more importance.

It cannot by any means be claimed that all wounds heal up by first intention. But if these rules are adhered to there will be few, if any, failures. Many cases will heal right away. Some will show a mild reaction which will soon subside.

ACCIDENTAL TRANSFERENCE OF THE MALARIAL PARASITE IN THE COURSE OF TRANSFUSION.

By ALFRED S. GUBB, M.D.,
SURGEON TO AUXILIARY HOSPITAL No. 102, ALGIERS.

THE following notes seem to point to the transference of the malarial parasite in the course of the operation of transfusion of blood, and as instances of such accidental contamination appear to be extremely rare—in fact, I know of no other example—I have thought it worth while to place the case on record:

A soldier back from Salonica arrived in Algiers in November, 1918. While in Salonica he had suffered a good deal from a pernicious form of malaria, and when sent into Hospital No. 102 he was profoundly anaemic, his blood only containing some 2,220,000 red corpuscles per cubic millimetre. At first he appeared to be gaining ground; he was cheerful, his appetite was good, and there was no fever.

Ten days after admission he suddenly became feverish, the temperature running up to 40.4° C., with headache and marked vertigo. This did not yield to doses of 2 grams of quinine a day and injections of hecine. The report on his blood stated that it contained *Plasmodium praecox*, with numerous young forms and nucleated red corpuscles. The anaemia became still more intense, and on December 13th he became semicomatose. It was then decided to perform transfusion as a last resource.

One of the sisters was good enough to place her services at our disposal, and transfusion was carried out on December 14th by the aid of Jeanbrau's apparatus. The operation was performed by a *confrère* who had had considerable experience of this apparatus. After duly sterilizing his hands and putting on sterile gloves, he began by exposing the median cephalic vein in the sister's arm, and when this had been accomplished he did the same for the patient who had been placed in close proximity. Everything being ready, he opened the donor's vein, aspirating the blood into the recipient *ad hoc*, and infusing it in due course into the patient's vein. The operation having been carried to a successful conclusion, it only remained for him to suture the incisions in donor and patient.

On December 29th the sister was seized with a violent rigor, accompanied by general aching and pain in the limbs. Her temperature rose to 40.2° C. As we were in the midst of an epidemic of influenza she was naturally thought to be suffering from an attack of the prevailing malady, but a few days later the periodicity of the attacks of fever suggested the possibility of malaria, and examination of the blood revealed the existence of *Plasmodium praecox*. She remained in a precarious state for several weeks, but eventually improved under combined quinine and arsenical treatment.

It is to be noted that the sister had never suffered from malaria, and was to all appearances in excellent health at the date of the transfusion. For that matter it was not the season for malarial attacks to develop; moreover, the disease is virtually unknown in Algiers proper, though common enough in the neighbouring districts. Then, too, the interval that separated the transfusion from the onset of the feverish attack roughly corresponds to the period of incubation of the fever. We are therefore justified in suspecting that the disease was conveyed at the time of the transfusion, especially as it turned out to be the same type of disease. With regard to the possibility of the transfer there were two occasions in the course of the operation when the transfer might conceivably have taken place: one when after isolating the patient's vein the surgeon proceeded to tap the donor's vein, and again when, after injecting the blood into the patient, he sutured the incision in the donor's arm.

The mere possibility of such a mishap renders it desirable to point to the importance of guarding against contamination by special precautionary measures to prevent any accidental transfer of infective material.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

APPENDICAL PUS IN A HERNIA SAC SIMULATING STRANGULATED HERNIA.

WHEN the points of the following case are reviewed in the light of facts exposed by the operation, it would seem theoretically possible to have established an exact diagnosis at the time of examination; but the actual difficulties of differentiation were so marked that the case is, in my opinion, worthy of note.

On August 17th, 1917, a young man, who gave the following history, was admitted to the Western Infirmary, Glasgow. Since childhood he had suffered from a right inguinal hernia which had on several occasions been so difficult to reduce as to require manipulation by his medical attendant. On the day previous to admission the patient was seized with pain in the right iliac region, and vomited once or twice. A few hours later his hernia, as he thought, became again irreducible because there was a very painful swelling in the scrotum which he could not put back. As on former occasions, therefore, he had to summon his doctor. Efforts to reduce the supposed hernia were unavailing, and the patient was sent into hospital.

I examined him shortly after his arrival and found a tense, elastic, inguino-scrotal swelling, which was so tender that any handling was intolerable. The temperature was 99.4° and the pulse rate about 96.

When the patient was anaesthetized I found the scrotal swelling to be irreducible, and on palpating the abdomen

detected distinct resistance in the right iliac fossa, suggestive of an abdominal abscess. It seemed best to open up the inguinal region first; when this was done I discovered a hernia sac full of pus, which had the odour characteristic of *B. coli* infection. The neck of the sac was found to be sealed by the inflammatory process, thus accounting for the irreducibility of the sac contents. The sac was ligated at the neck, after the adherent structures had been stripped off and excised. The inguinal wound was partially closed and drained by a rubber tube.

Using McBurney's method, I then opened the abdomen and found a gangrenous appendix surrounded by an abscess, fairly well walled off. The usual treatment was adopted for this and the patient made an excellent recovery.

Glasgow.

CHARLES BENNETT, M.B.

HALLUX VALGUS OPERATION.

SEVEN years ago I operated on a lady for an exaggerated condition of hallux valgus of both feet, the great toes crossing completely over the second toe. The deformity of the left metatarso-phalangeal joint was very marked. The operation performed was that recommended by Mayo.

At the present time there is excellent movement of both great toe joints, and the inner side of the feet remains absolutely in a straight line; an x-ray photograph demonstrates the very excellent result obtained by adhering strictly to the technique of the operation as laid down by Mayo.

The only disability (so to call it!) is the necessity of wearing a shoe following the outline of a normal foot, the modern boot-maker's enormity not being tolerated.

W. B. COSENS, Major R.A.M.C.

Reviews.

STERILITY IN WOMEN.

THERE is no doubt that from the general point of view the time is ripe for the appearance of a monograph on *Sterility in Women*.¹ Unfortunately there has been no advance in our knowledge of the subject which makes such a book essential from the strictly professional point of view. Dr. GILES's little book with this title is, however, none the less assured of a welcome, for at a time like the present the general or social point of view must predominate. In the aftermath of the greatest war in history the subject of sterility assumes a national importance to an unexampled degree. The blight of unproductive marriage must be prevented or cured if the nation is to make up in numbers what, unfortunately, it can never wholly replace in quality.

But there is still another reason why the attention of the profession and of the public may well be drawn to the subject, namely, the prevalence of venereal disease. Syphilis and gonorrhoea between them account for an enormous proportion of sterility, and for what is so closely allied to it—pre-natal mortality. The dangers of syphilis are now being more fully realized by the public, but what is not recognized as it ought to be is that in the woman gonorrhoea, so often regarded by the male as a mere trifle, is on the whole the more serious disease of the two. This has become increasingly true in recent years with the great advances made in the treatment of syphilis. There is no disease more likely to doom a woman to either absolute or relative sterility than gonorrhoea—and to sterility combined with years of chronic ill health and constant suffering.

Dr. Giles's book is of necessity mainly a summary and digest of the best that has been written on the subject. Incidentally it may be noted that he has collected an admirably arranged bibliography, which will be of the greatest use to other investigators. The profession already knows and appreciates Dr. Giles's unusual capacity for reducing his facts to tabular form, and in the present volume he has compiled several interesting statistical tables in regard to sterility. His investigations have led him to a confirmation of his conclusion that fibroids are not so much the cause as the result of sterility. He also draws attention to a point of some importance—namely,

¹ *Sterility in Women*. By Arthur E. Giles, M.D., B.Sc., F.R.C.S. Edin. London: Henry Frowde, and Hodder and Stoughton, 1919. (Demy 8vo, pp. xv + 227; 11 figures. 10s. net.)