

FELONS

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It is a curious fact that in every walk of life the majority of us strive to do the big things with the result that some of the simpler, obvious, everyday things are treated lightly or totally ignored. Surgery is no exception to the rule. The youngest member of the profession seeks to invent some new methods of devising or improving major operations, thus neglecting the common ills with which he daily comes in contact. In every surgical dispensary and in the offices of many practitioners scarcely a week goes by that a patient suffering from a felon does not apply for treatment. In the vast majority of cases, he is told that the condition is not serious; some poultice or local application is made at the first visit and later, when suppuration occurs, it is lanced. This form of treatment often results in the loss of a part or all of the distal phalanx.

In the *Journal of the American Medical Association* for May, 1913, I published an article on the "Anatomy, Pathology and Treatment of Felons." This was the result of several months labor in the dissecting room, pathological laboratory and surgical dispensaries. At that time I gave the following definition, "A felon is the primary inflammation of the connective-tissue space which is situated on the palmar surface of the last phalanx of the fingers." This definition was determined only after a careful study of the anatomy of the finger and careful dissections of several felons. Wax was injected into the fingers, and frozen sections were made which clearly demonstrated the presence of this connective-tissue space.

Kanavel in his admirable work on infections of the hand did considerable work on the anatomy of the finger and, following out his plan, we had several sections made of the different parts of the finger. A study of these will show this space clearly and a knowledge of this will explain to a large extent the pathology of felons and suggest a logical treatment.

We also made some X-ray studies of the finger after injecting red lead into this connective tissue. Kanavel had already pointed out that the epiphysis of the distal phalanx was supplied by a branch of the digital artery before it enters this connective-tissue space. This I found to be true in most of my dissections. The diaphysis, however, not only

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receives its blood supply from a different branch, but it is supplied only after the artery has passed into this connective-tissue space.

Now when we have inflammatory processes going on in this space with the subsequent swelling, the venous return is shut off, hence that peculiar throbbing pain so characteristic of felons, due, of course, to the pressure on the nerves with each pulsation of the artery; the pressure continuing, the arteries are compressed, thus shutting off the blood supply and necrosis ensues. The source of the infection is invariably a puncture wound, needle or pin prick, hence felons are more common in women.

Symptoms.—As a rule the first intimation the patient has of the trouble is a consciousness of a sticking pain in the tip of the finger, often describing it as if he felt a foreign body in there, *e.g.*, a splinter. Within a few hours, this gives way to the throbbing pain. Then the distal portion of the finger becomes red, swollen and tender. At the end of about twenty-four to thirty-six hours, fluctuation is present and all pain ceases. This symptom of relief is often misleading to both the patient and the physician, for instead of being a favorable condition, as they suppose, it means that gangrene and possibly necrosis are beginning.

Treatment.—An incision starting at the base of the nail on one side is extended in the line of the furrow over the tip of the finger, down on the other side to a point on a level with the beginning of the incision, in that way, making a flap of the tip of the finger.

The appearance after the flap is made and for the first forty-eight hours is often the source of worry to the patient and the operator. This is the critical stage in the treatment and on no account should the drainage be removed and the flaps returned to their original position. The final result will not be a deformity and bear this in mind. We grant that for a week or ten days afterwards you might regret your radical procedure, but experience has shown that if the method given above is carefully adhered to, the final scar will be scarcely noticeable.

The wound is dressed with normal saline solution. The dressings are removed daily, but the drainage is undisturbed until the third day, when it is permanently removed.

Keeping the parts moist by soaking the finger (dressing left intact) every third hour in normal saline solution is a source of comfort to the patient and aids drainage.

It is now practically three years since I advocated this method and have had the privilege of seeing many cases so treated by myself and others. The most common mistake made is not getting the incision close enough to the nail. This is absolutely essential to preserve sensa-

tion in the tip of the finger. Next in order comes the poor result from waiting too long. To be successful, it must be done early. Another bad incision is the longitudinal, which fails to give proper drainage.

I have 47 cases on file since my last paper, followed from beginning to end. Of these, 40 cases were opened within the first forty-eight hours, and complete cure ensued. Of the other 7, 5 were done after fifty hours had elapsed. Of the first two series the results were better than I have seen from longitudinal incision, and of the last two cases, one had to have the phalanx removed while the other recovered only after a long and tedious treatment with a deformed finger.

It can be dogmatically asserted that if the procedure is followed out properly, observing the rules, loss of sensation in the tip of the finger never occurs and the final result will be practically a normal finger.

CONCLUSIONS AND RULES

1. All cases are caused by puncture wounds.
2. Cases must be treated within forty-eight hours to get a perfect result.
3. Cases of over seventy-two hours' standing have usually damaged the bone.
4. Nitrous oxide anæsthesia is advisable in the majority of cases.
5. The length of time required for perfect function depends upon the time elapsing before treatment is instituted.
6. Restoration of function is quicker by this method than any other tried in my experience.

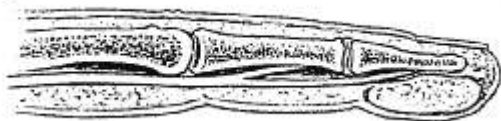


FIG. 1.—Note the fact that this distended space is walled off from the remaining subcutaneous tissue of the rest of the finger.



FIG. 2.—Longitudinal-section of distal phalanx of index finger. The bone was carefully dissected out before fixation so that decalcification was unnecessary. A, epiderm; B, dense fibrous corium; C, loose areolar fatty and connective-tissue space in its entirety, condensed fibrous tissue limiting the space at E, tendon of flexor longus digitorum.



FIG. 3.—Low power of the area B of Fig. 2. A, epiderm; B, dense corium; C, loose space; D, limiting fibrous portion of space; E, tendon of flexor longus digitorum.

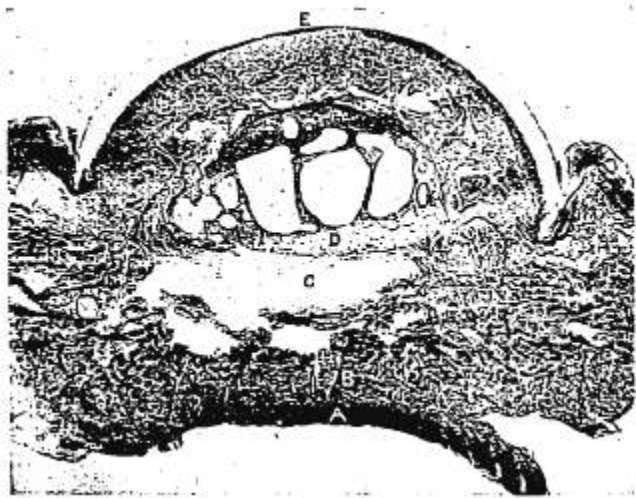


FIG. 4.—Transverse section of the digital phalanx. Section made after decalcification. A, epiderm; B, dense corium; C, loose areolar fatty and connective-tissue space, some of which is lost in section; D, bone; E, nail-bed.



FIG. 5.—Connective-tissue space injected with red lead.

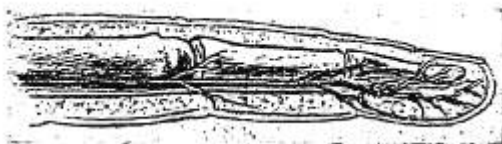


FIG. 6.—Note the fact that the diaphysis receives its blood supply only after the artery has passed through this connective-tissue space. In order to bring this point out more clearly we injected a mixture of red lead and turpentine into the radial and ulnar arteries of a cadaver and had X-ray pictures made.



FIG. 7.—Blood-vessels. Note how clearly this point is brought out in the X-ray plate



FIG. 8.—Proper incision.



FIG. 9.—Flaps with drainage.



FIG. 10.—Note position of wrong incision which injures nerve supply to flap.

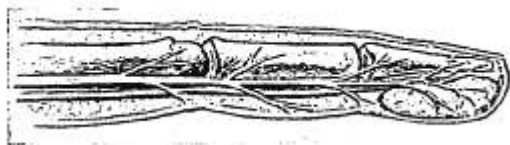


FIG. 11.—Nerve supply of finger.