Remarks

ON THE

TREATMENT OF FRACTURES OF THE PATELLA OF LONG STANDING.

BY LORD LISTER, F.R.S.

SHORTLY before I retired from practice I devised a method of dealing with fractures of the patella of long standing which gave very satisfactory results. I failed to publish it at the time; but a surgical friend having asked my advice in a case of that kind, I wrote for him a detailed description of the procedure, preserving a copy of my letter, which I venture, even at this late period, to reproduce.

Fisher's Hotel,
Pitlochry, Scotland.
September 15th, 1895.

My dear Dr. ———,

I should have written to you long ago regarding Miss ———'s case, had I not known that you could not deal with it till you had returned home after your autumn holiday in Europe; Mr. ——— having given me your address in London up to the 15th inst. The limb is no doubt useful as it is; but it is very far from being as strong as we should wish to see it; and assuming, as I do in your case, that the surgeon can look with confidence to an aseptic condition of the wound, I think an endeavour should be made to improve it. Indeed, there is good reason to believe that it will be made as serviceable as ever. I doubt, however, whether you will be able to bring the fragments together without some special mode of procedure. When you visited my wards in King's College Hospital, now several years ago, I showed you a young man on whom I had operated on account of a fracture of the patella of long standing with considerable separation of the fragments, where I had attained my object by means of free division of the quadriceps extensor muscle. This, however, is a pretty severe measure and involves, at the best, more or less weakening of the muscle and a long cicatrix.

Since that time I have greatly improved on that practice, and have succeeded without touching the quad-

riceps by proceeding in two stages. The idea was suggested to me by a case published by Dr. Lucas-Championnière of Paris, who, being unable

Fig. 1.

to get the fragments into apposition, wired them together nevertheless, and left the wire in as an adjuvant connecting medium. It occurred to me that, although such a use of the wire did not seem likely to be very satisfactory as a permanent arrangement, yet it might probably be adopted with great advantage as a temporary expedient; and that, after the quadriceps had been gradually stretched by the use of the limb in the

position so produced, the fragments might by a second operation be brought into contact, and might then be wired in the usual way after paring the opposed surfaces. The first case in which I put this idea in practice was a sufficiently testing one. The patient was a young woman of very stout and heavy build who had fractured both patellae, one of them four years, the other three years before she consulted me. The fragments were, in both limbs, considerably separated; and in the left, where the bone had been injured four years previously, the separation was so great (about 5 in.), and the upper fragment, at the same time, so very small, that I at first despaired of being able to do anything.

But on the right side, the upper fragment being of good size and the separation more moderate, I determined to give the plan a trial. I made two short longitudinal incisions (A B and C D) over the two fragments (shown in dotted line) [Fig. 1], and having exposed them by a little dissection, drilled two holes in the upper one, and passed through them, from without inwards, the ends of a piece of the usual stout silver wire, so that, when the ends were pulled upon, the middle of the loop of wire would press upon the surface of the fragment, thus [Fig. 2]:

Fig. 2.

Next, passing into the lower incision a blunt instrument (a broad raspatory), I detached from the front of the femur the soft parts lying between the incisions, consisting, of course, only of skin and fat, as the muscle was absent at that part. Then passing a strong pair of forceps from the lower incision under the skin till their blades appeared in the upper incision, I seized the ends of the wire and drew them down into the lower incision. I then drilled two holes in the lower fragment and passed the ends of the wire through them from within outwards, and, after drawing the upper fragment well down, secured them in the

usual way and cut the ends short. The immediate result, so far as the fragments were concerned, is indicated in this diagram [Fig. 3].

Fig. 3.

The incisions in the skin were then brought together by sutures and a dressing (the double cyanide gauze) applied.

In drawing down the upper fragment I found a great

Fig. 4.

advantage from the use of a very strong sharp hook [Fig. 4], the point of which was inserted in the tendon of the quadriceps at its attachment. By this means I was able to exert much greater traction upon the bone than can be done by simply pulling upon the wire; and, in order to relax the quadriceps as much as possible, the limb was placed in the vertical position before the fragment was pulled down. The dressing having been put on, a trough of Gooch's

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splint was applied to the limb still in the elevated position, and the same attitude was maintained as the patient was removed to the ward, and continued by attaching the end of the splint to a rope connected with the tripod and pulley used in applying Sayre's plaster of Paris jacket. This position of the limb did not cause the patient material inconvenience, and after two or three days the rope was slackened a little so as to allow the end of the splint to come down an inch or two, and the same thing was repeated every two days or so, till the limb could be placed quite horizontal.

This preliminary operation has taken a long time to describe; but in execution it is of the simplest character, no paring of the broken surfaces being done at this stage, and there being almost no bleeding and no shock. The wound having healed (I need hardly say without suppuration), the patient was allowed to leave her bed, and left the hospital soon after to practise using the limb.

Before long she was readmitted, and the second operation was performed. The lower cicatrix was opened and the wire removed, and two interrupted wire sutures placed in the tracks of the previous continued one; the fragments, of course, being this time pared to clear them of fibrous tissue of new formation, and produce smooth surfaces for coaptation. This was all satisfactorily effected, though not without the use of the powerful hook and the vertical position of the limb. The result was restoration of the use of the joint in a manner so satisfactory that I determined to try the same procedure in the other limb. The only difference which I made in this case was that, as the upper fragment was too small to bear drilling, I passed the ends of the wire, in dealing with that fragment, through the tendon of the quadriceps just above the upper border of the bone, the lower fragment, which was, of course, very substantial, being drilled as in the other limb. By this means, aided by the vertical position of the limb and the hook, I was able to bring down the upper fragment very satisfactorily, so much so that I did not feel it needful to have the patient use the limb in walking before proceeding to the second operation, but did this before she left her bed, soon after the wound had healed. In the second operation I applied two interrupted sutures, passing them, as in the first operation, through the track in tendon and bone, which the first wire had occupied.

The continued wire suture, which was first used by Dr. Hector C. Cameron of Glasgow, has the great advantage, where much traction has to be made upon the fragments, that the pressure of the wire is distributed over the anterior surface of the bone instead of being concentrated upon the limited portion of tissue included in an interrupted stitch. And this is peculiarly valuable in old cases of fracture; in which, as a result of long disuse, the bone undergoes interstitial atrophy, that sometimes makes it very soft. But this suture has the disadvantage that it may tilt the fragments so that their anterior edges do not come well into contact with each other, as indicated in this diagram [Fig. 5.] :

Fig. 5.

This was my reason for preferring the interrupted suture in the second stage of the proceeding. In the first stage, in which the principal dragging probably takes place, this circumstance is a matter of no consequence, as accurate apposition of the fragments is not then aimed at; and in any case admitting of being dealt with by a single operation, though not without much traction, this defect of the continued suture might be readily got over by introducing a superficial central stitch of comparatively thin wire to ensure coaptation of the anterior margins of the fragments.

The effect of the second operation in the above case was such as would have surprised me if I had not seen in other cases how substantial and strong a patella may result from wiring after thorough paring of the surfaces, even when one of the fragments is of quite insignificant size. Without my notes I cannot say how long it is since the case was treated, but I think it must be about four

years. And I lately had the satisfaction of hearing from the patient that she could walk well, with strong and supple knee-joints.

In Miss —'s case I would suggest that you should, in the first instance, before making any incision, but after she has been placed under an anaesthetic, apply the strong sharp hook to the border of the upper fragment through the skin, and, with the limb vertical, ascertain to what extent the quadriceps will yield immediately. If the upper fragment came pretty well down, you would proceed to do all by one operation, but if there were the slightest doubt as to the feasibility of this, you would adopt the preliminary procedure as in the above case.

Supposing you to be doing all by one operation and that it seems desirable to employ Cameron's continued suture, as the wire will be left in permanently, it would be better to introduce its ends first into the lower fragment and fix them over the upper one, where the fixed ends could not cause inconvenience in kneeling. The strong hook would keep the upper fragment well down during the fixing process. If I had published this case, as I ought perhaps to have done, I should not have had to inflict upon you so large an amount of manuscript.

I remain,
Ever truly yours,
(Signed) JOSEPH LISTER.

Remarks

ON THE

RATIONAL TREATMENT OF FUNCTIONAL DYSPESIA.

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The first step towards a rational treatment of functional dyspepsia—a consummation, it will be admitted, devoutly to be wished—must be a more scientific classification of its forms. The rough clinical division of cases, according to symptoms, into the "atonic," "acid," "flatulent," and other groups commonly adopted is unsatisfactory, because the same symptoms may be produced by totally different disorders of function which demand quite different treatment. Now, the physiological functions of the stomach as an organ are these: (1) secretory, (2) motor, (3) sensory, (4) absorptive; and any case of functional dyspepsia must be due to disorder in the normal discharge of one or more of these functions. It follows from this that a rational classification of cases of dyspepsia must be based upon an accurate discrimination of the function or functions affected, and this, with a proper use of modern methods of investigation, should not be very difficult.

Investigation shows that the alterations in the functions of the stomach which produce the symptoms spoken of as "dyspepsia" tend to be in the direction of either excess or defect. This tendency may be discussed in the case of each function separately.

1. *Secretory Functions.*—An excess of secretion may be manifested by a total increase in the amount of gastric juice secreted (hypersecretion, gastro-succorrhoea, Reichmann's disease), or it may affect the hydrochloric acid alone (hyperchlorhydria). Conversely there may be a deficiency in the total amount of juice (hypochylia), or it may even be absent altogether (achylia), or the hydrochloric acid may alone be deficient (hypochlorhydria).

2. *Motor Functions.*—In considering the disorders of the musculature of the stomach it is necessary to distinguish between its more passive function of "tonicity" and its active "motility." Defect of these results in "hypotonicity" and "defective motility" respectively. Mere want of tone is responsible for many cases of "splashing stomach"; if the active movements are also in defect there is delay in the passage of the food onwards, but no actual stagnation such as occurs when the pyloric outlet is blocked. Increase of the motor functions is less important in the production of dyspepsia than their defect, but "pyloric spasm" may be regarded as an increased manifestation of the active movements, usually,