TREATMENT OF CERTAIN FRACTURES OF THE PATELLA

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In the literature sufficient attention has not been given to a special type of treatment of transverse and comminuted fractures of the patella in which one large fragment is intact and there are one or more smaller fragments. The only discussion of this subject, to my knowledge, has been that by Thomson at the meeting of the American Medical Association in June, 1934. Much has been written about the importance of insertion of sutures of kangaroo tendon or of fascia to prevent not only the horizontal separation of the fragments, but to prevent also any tilting of one fragment on the other. Practically nothing has been said about the removal of the smaller fragments and the substitution of tendinous and fascial repair for bony union. I have used this procedure for a number of years with such extremely satisfactory results including the elimination of many of the difficulties ordinarily associated with this type of fracture that I feel that a reference to this procedure is warranted at this time.

The keynote of the treatment of injury of the extensor apparatus of the knee is the restoration of the extensor power without impairment of flexion. The patella is simply a sesamoid bone lying at the point of the tendinous insertion of the great extensor muscle of the thigh (the quadriceps). The significance of a fractured patella depends largely on the loss of the continuity of the tendon; and the success or failure of treatment depends on the restoration of the function of the tendon. If the tendon is properly repaired, it really does not matter whether the patella is only half or two-thirds of its original size. Hence it would appear that there should be no disadvantage in the removal of the comminuted fragments so long as the tendon and the lateral expansions of the capsule are meticulously repaired. This assumption, indeed, has been borne out by clinical experience.

I have adopted the following procedure for the treatment of these fractures of the patella. Usually it is advisable to wait from two to four days after the injury has been received before the operation is performed. During this period the knee is splinted in extension with or without traction, and ice caps are applied. Aspiration of fluid from the knee joint often is helpful if much hemorrhage has occurred.

After suitable preparation, the patella is explored under either spinal or general anesthesia. The application of a tourniquet may greatly facilitate the operation.

A curved longitudinal incision is made and the tissues are reflected to give complete exposure of the joint. The fracture is explored and the blood clots are removed. The smaller fragments of the patella are dissected free from the tendon and then the tendon is attached to the patella by loops of fascia from the same leg. These are passed through the tendon and fastened into either the patella or its capsule.

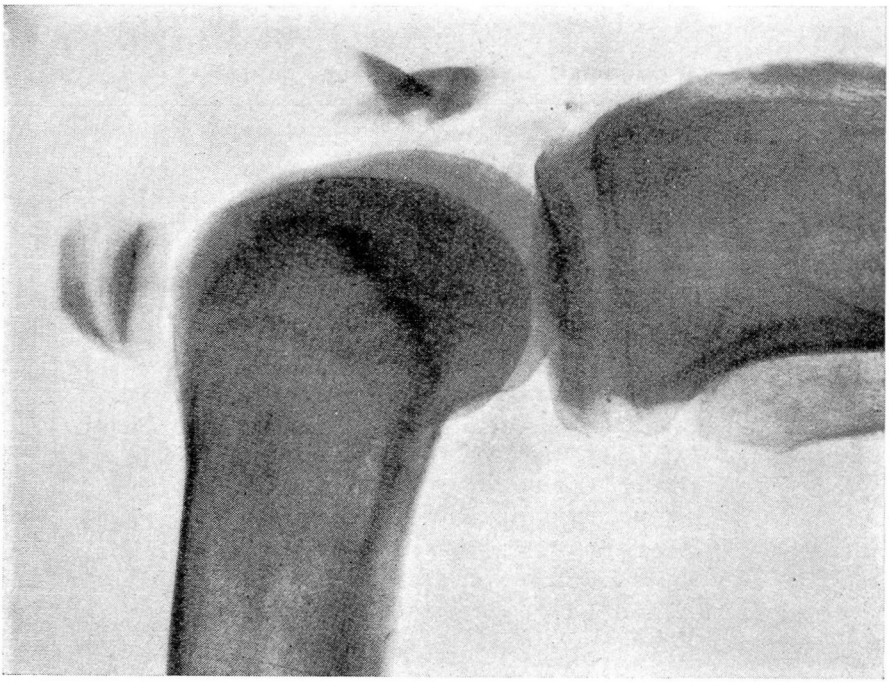

FIG. 1.—Roentgenogram showing comminution of lower third of patella following an automobile accident.

Care should be taken not to shorten the patellar ligament in this process or a much longer time may be required to procure full and normal motion. There are many ways in which the fascia or sutures may be applied and each surgeon usually has some modification that satisfies his individual fancy. The lateral expansions of the torn capsule are then carefully sutured.

The advantages of this procedure are that active motion of the knee can be restored much sooner as dependence is placed on a fascial and not a bony repair. Early motion of the joint is certainly desirable and this can be accomplished without the danger of disturbing any bony union. It has been shown by Scudder and Miller[1] that in 19 per cent of the cases of fracture of the patella

absolutely no bony union developed, yet good functional results were reported. Therefore, if good results were obtained in such a large proportion of cases with fibrous union, it certainly suggests the advantage of depending only upon the repair of the tendon, for this facilitates the early motion of the joint. Occasionally permanent loss of motion has been reported as the result of long immobilization. Early movement is essential for good functional results and hence the advantage of the operation for repair of the tendon is obvious.

FIG. 2.—Roentgenogram made ten weeks after operation showing the repair. There was normal function in the knee joint.

An additional advantage of this procedure is that there is no possibility of producing an irregular under-surface of the patella which would lead to pain and loss of motion in the knee. The constant movement with the accompanying friction produced by such a rough area may result in arthritic changes and long disability.

No matter how great care is taken to approximate the fragments, it is extremely difficult to avoid this irregularity.

In the postoperative treatment it is necessary to emphasize the importance of voluntary efforts on the part of the patient to re-establish the function of the quadriceps. Massage and electrical treatments are beneficial but their value cannot be compared with that of the patient's own efforts.

Summary

The advantages of a simple operation for fracture of the patella, in which the bony fragments are removed and the emphasis is placed on repair of the tendon, include the possibility of early mobilization which greatly enhances the chances for good functional results, and elimination of the danger of a traumatic arthritis from friction of the rough surfaces produced by the patellar fragments.

Reference

1. Scudder, C. L. and Miller, R. H.: Certain facts concerning the operative treatment of fracture of the patella. Boston M. and S. J. 175:441-442, (September 28), 1916.