Synovectomy of the Knee in Rheumatoid Arthritis

Two inter-related studies have been made of the outcome of knee synovectomy. The first is concerned with the early postoperative period of recovery from the temporary impairment of function stemming directly from the surgical intervention. The second is concerned with the long-term outcome, with particular emphasis on changes in serial radiographs.

Part I. Short-term Observations. By A. V. Camp (Stoke Mandeville Hospital).

Synovectomy of the knee for rheumatoid arthritis has been used as a form of treatment for many years. Little, however, is known of the best method of postoperative treatment and the long-term results. The success of the operation may be measured by the loss of pain and swelling in the knee, by the range of movement achieved, and by the strength of the quadriceps muscle.

A study has been made of all patients with rheumatoid arthritis admitted for knee synovectomy over a period of 2 years. The range of movement postoperatively and the quadriceps function have been measured and the operative results recorded. The factors governing the recovery of knee function have been studied in order to forecast the short-term prognosis in individual patients.

Part II. Long-Term Results. By A. R. Taylor and J. Scott Harrison (Stoke Mandeville Hospital).

94 knees were submitted to synovectomy and followed for periods of up to 6 years, special attention being paid to changes recorded in serial radiographs.

Discussion

Dr. G. D. Kersley (Bath) The Bath series, which now dates back about 20 years, was first written up by Mr. London, and is being reassessed by Mr. Bliss, gave very much the same results. The fact which we learnt fairly early on, and which I think agrees with what we have just been told, is that you should tackle these cases before there is much radiological change. For a good many years, therefore, we have excluded patients in whom x-rays showed marked changes. The only point on which we might slightly disagree with you is that we think that at the end of a fortnight, in a very large number of cases, a manipulation, sometimes together with a steroid injection, expedites a good result.

Dr. E. N. Glick (London) I should like to know what happens in the unoperated knee.

Mr. Taylor We do not have information about the progress of the disease in other joints.

Dr. A. G. S. Hill (Stoke Mandeville) This question is being asked in the United Kingdom synovectomy trial: 'Did the patient have a general exacerbation and if so did the operated knee participate in it?'. I should have said, off the cuff, that in these synovectomies cases one sees both patterns: the synovectomized knee may remain cool amidst the fire of the general exacerbation, or, in contrast, it may share in the fire.

Mr. Kates (London) When I started synovectomies of the knee 8 years ago I was an optimist, but my optimism has now diminished considerably. In my experience one cannot anticipate operative findings in the knee joint on x-ray findings alone. I have had a number of shocks, when x-rays have looked fairly normal but marked erosion of cartilage on both femoral and tibial condyles has been found at operation; in such cases my own feeling has been that the disease process was too far advanced for synovectomy to be successful although the x-rays showed little change. We have also seen that synovium regenerates completely within 6 to 12 months of surgery, and that even if one performs a complete anterior synovectomy of the knee, only 60 per cent. of the synovium can be removed. Histologically, the regenerated synovium resembles the original. I think that the only way to solve the problem whether synovectomy is of value or not, is by the United Kingdom Trials. Those of us who have been and are taking part in these trials have been told that there is a great shortage of knees, and yet here we have a series treated in the past 2 years which seems to have missed the net.

Dr. A. G. S. Hill (Stoke Mandeville) The criteria for the Trial, as you know, Mr. Kates, are fairly strict, and I should have thought that only 10 or 15 per cent. of the cases that we submit to synovectomy are eligible for the Trial. For this there are all sorts of reasons (the erosions are more than minimal, the serology is negative, or some factor is present that excludes them from the Trial). Does that answer the query? Is this your experience, Mr. Kates?

Mr. A. Kates (London) Yes. We find that we are able to send very few cases through to the Trial.

Dr. A. St. J. Dixon (Bath) This raises a point of fundamental importance in this Trial. If in fact from your experience only 15 per cent. are eligible, the conclusions that we draw from our Trial when we finish it will not be applicable to the majority of synovectomies.

Dr. Hill I think this is a well-made point.

Dr. K. N. Lloyd (Cardiff) Regarding the degree of joint damage before admitting these patients to synovectomy, we have heard much about the 'joint space'. I don't like this word at all because it gives the wrong impression. What we are talking about as 'joint space' is the thickness of the articular cartilage, and I would like to submit that, unless you take x-rays on weight-bearing or under load, you cannot properly estimate the degree of cartilage thickness. This is something that is not done routinely and I think should be.

Mr. Taylor Regarding Mr. Kates' comments about the regeneration of joint synovium in 12 months, this is known to occur experimentally in as little as 60 days, and our arthrograms after synovectomy show that at least in the human knee joint there may be complete regeneration at 3 months. We have taken earlier arthrograms. I have one taken at 3 weeks with evidence of a supra-patellar space. Regarding the x-ray interpretation: I am in complete agreement. This is an exceedingly difficult problem. The radiographs vary not only with weight-bearing but with the radiographer who takes them, the position of the knee, and the density of the x-ray; and repeat x-rays on the same patient will pick up further.

21 patients with classical rheumatoid arthritis and severe subluxations of the cervical spine are reported. Fourteen had atlanto-axial subluxations with displacements ranging from 5 to 15 mm. (mean 9.5 mm.). The next most frequent level was at C4-5; this occurred in five patients with a displacement of from 3 to 10 mm. (mean 5 mm.). Thirteen patients underwent surgery because of symptoms or signs of spinal cord compression, or vertebral artery insufficiency. The operations comprised eight posterior fusions, three anterior fusions, and two laminectomies. The differential diagnosis, the radiological findings, the indications for surgery, and the results of treatment have been analysed.

Discussion
MR. D. O. Hancock (Stoke Mandeville) Could I ask what your operative indications are? Would you operate on all cases showing subluxation without neurological signs? If you would not, what sort of neurological signs do you look for? For example, would you operate for minimal hyporeflexia or would you prefer a little more? I quite agree about the extreme difficulty in assessing the power in these severely crippled patients, as I find it impossible to differentiate neurological loss from rheumatoid loss. Could I commend to your neurosurgeon's notice the excellent operation described by Newman and Sweetnam (1969) on the use of cancellous bone-chip grafts applied to the rawed occiput and the arches of C1 and 2? This is a simple and most effective operation.

MR. CRELLIN I have also noticed this and it is certainly much simpler than passing wires around the laminae, which is why we employ a neurosurgeon. To answer the first point, we do not know when we should operate, and that is why I have suggested that several centres should co-operate to solve this problem. We have not felt that severe subluxation in itself was a reason to operate.

I do not think we shall know until the natural history of this condition is worked out. There are obviously many patients who have severe subluxation who have no evidence of spinal cord compression or vertebral artery trouble. Secondly, as far as the neurological assessment of the patient goes, it is an extremely difficult thing to decide. Our neurosurgeon puts great weight on two-point discrimination in his assessment of these patients, and speaking as an orthopaedic surgeon I probably would not notice anything wrong with them neurologically when he can! I think that if there is evidence of neurological impairment at a very early stage then it is time to operate. It is probably time to operate before that, but it is difficult to find out just when that should be. Are we to be guided by an actual amount of subluxation of x number of millimetres at the atlanto-axial joint, or should we wait for signs to occur? I do not know. I have left it an open question.

MR. CRELLIN I am afraid I have not. In one of the most severely affected of these patients, when we explored her neck from behind, we could find no evidence of cervical spine at all, at several levels. This is not obviously due to rheumatoid granulations or anything like that. I cannot explain why they disappear, but they just pull out like a piece of bubble gum and vanish.

MR. B. M. Ansell (Taplow) Do you take any notice of wrist position, and does it in any way influence the end-results? Secondly, have you had any problems fairly late postoperatively—say after 6 months—with carpal tunnel and flexor tendon involvement causing a patient, who had previously been doing quite well, to lose movement, say by one year? Thirdly, what is the advantage of skin over silastic skid pads or prostheses?

MR. BAILEY To answer these questions one at a time: Of course wrist position is terribly important. If we have a patient with a weak hand and weak flexors because of a painful wrist, then we do a fusion first—after testing as a preliminary step with splintage. If splintage improves